Support Document for EPA's Action Reviewing New Or Revised Water Quality Standards for the State of Oregon

March 2, 2004

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1. NEW OR REVISED OREGON WATER QUALITY STANDARDS REVIEWED BY EPA

Note: All underlined text indicates the actual change or revision to the rule unless otherwise noted. Additionally, some language is added for context that has not been changed.

DEFINITIONS [340-041-0002]

(2) "Ambient Stream Temperature" means the stream temperature measured at a specific time and place. The selected location for measuring stream temperature must be representative of the stream in the vicinity of the point being measured.

(4) "Applicable Criteria" means the biologically-based temperature criteria set out in OAR 340-041-0028(4), the superseding cold water protection criteria as described in OAR 340-041-0028(12), or the superseding natural condition criteria as described in OAR 340-041-0028(8). In addition, the applicable criteria may also be site-specific criteria approved by EPA. A subbasin may have a combination of applicable temperature criteria derived from some or all of these numeric and narrative criteria.

(7) "Basin" means a third field hydrologic unit as identified by the U.S. Geological Survey.

(9) "Cold-Water Aquatic Life" means aquatic organisms that are physiologically restricted to cold water, including but not limited to native salmon, steelhead, mountain whitefish, char (including bull trout), and trout.

(10) "Cold Water Refugia" means those portions of a water body where, or times during the diel temperature cycle when, the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well mixed flow of the water body.

(12) "Cool-Water Aquatic Life" means aquatic organisms that are physiologically restricted to cool waters, including but not limited to native sturgeon, pacific lamprey, suckers, chub, sculpins and certain species of cyprinids (minnows).

(13) "Core Cold Water Habitat Use" means waters that are expected to maintain temperatures within the range generally considered optimal for salmon and steelhead rearing, or that are suitable for bull trout migration, foraging and sub-adult rearing that occurs during the summer. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A.

(14) "Critical Habitat" means those areas that support rare, threatened or endangered species, or serve as sensitive spawning and rearing areas for aquatic life as designated by the U.S. Fish and Wildlife Service or NOAA Fisheries pursuant to the Endangered Species Act (16 USC 1531).

(31) "Migration Corridors" mean those waters that are predominantly used for salmon and steelhead migration during the summer, and where there is little or no anadromous salmonid rearing occurring in the months of July and August. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121Band Figures 151A, 170A, and 340A

(34) "Natural Conditions" means conditions or circumstances affecting the physical, chemical, or biological integrity of a water of the State that are not influenced by past or present anthropogenic activities. Disturbances from wildfire, floods, earthquakes, volcanic or geothermal activity, wind, insect infestation, diseased vegetation are considered natural conditions.

(35) "Natural Thermal Potential" means the determination of the thermal profile of a water body using best available methods of analysis and the best available information on the site potential riparian vegetation, stream geomorphology, stream flows and other measures to reflect natural conditions.

(36) "Nonpoint Sources" means any source of water pollution other than a point source. Generally, a nonpoint source is a diffuse or unconfined source of pollution where wastes can either enter into, or be conveyed by the movement of water, to waters of the State.

(40) "Point Source" means a discernable, confined and discrete conveyance, including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft, or leachate collection system, from which pollutants are or may be discharged. Point source does not include agricultural storm water discharges and return flows from irrigated agriculture.

(45) "Salmon" means chinook, chum, coho, sockeye and pink salmon.

(46) "Salmon and Steelhead Spawning Use" means waters that are or could be used for salmon and steelhead spawning, egg incubation and fry emergence. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B.

(47) "Salmon and Trout Rearing and Migration Use" means thermally suitable rearing habitat for salmon and steelhead, rainbow and cutthroat trout as designated on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A.

(48) "Salmonid or Salmonids" means native salmon, trout, mountain whitefish and char (including bull trout). For purposes of Oregon water quality standards, salmonid does not include brook or brown trout since they are introduced species.

(50) "Seven-Day Average Maximum Temperature" means a calculation of the average of the daily maximum temperatures from seven consecutive days, made on a rolling basis.

(52) "Short Term Disturbance" means a temporary disturbance of six months or less where water quality standards may be violated briefly, but not of sufficient duration to cause acute or chronic effects on beneficial uses.

(56) "Subbasin" means a fourth field hydrologic unit as identified by the U.S. Geological Survey.

(57) "Summer" means June 1 through September 30 of each calendar year.

(58) "Threatened or Endangered Species" means aquatic species listed as either threatened or endangered under the federal Endangered Species Act (16 USC 1531 et seq. and Title 50

of the Code of Federal Regulations).

340-04l-0004
Antidegradation

(1) **Purpose.** The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. The standards and policies set forth in OAR 340-041-0007 through 340-041-0350 are intended to supplement the Antidegradation Policy.

(2) **Growth Policy.** In order to maintain the quality of waters in the State of Oregon, it is the general policy of the Commission to require that growth and development be accommodated by increased efficiency and effectiveness of waste treatment and control such that measurable future discharged waste loads from existing sources do not exceed presently allowed discharged loads except as provided in section (3) through (9) of this rule.

(3) **Nondegradation Discharges.** The following new or increased discharges are subject to this Division. However, because they are not considered degradation of water quality, they are not required to undergo an antidegradation review under this rule:

(a) *Discharges Into Existing Mixing Zones*. Pollutants discharged into the portion of a water body that has been included in a previous mixing zone for a permitted source, including the zones of initial dilution, are not considered a reduction in water quality, so long as the mixing zone is established in accordance with OAR 340-041-0053, there are no other overlapping mixing zones from other point sources, and the discharger complies with all effluent limits set out in its NPDES permit;

(b) *Water Conservation Activities*. An increase in a pollutant concentration is not considered a reduction in water quality so long as the increase occurs as the result of a water conservation activity, the total mass load of the pollutant is not increased, and the concentration increase has no adverse effect on either beneficial uses or threatened or endangered species in the water body; and

(c) *Temperature*. Insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality.

(d) *Dissolved Oxygen*. Up to a 0.1 mg/l decrease in dissolved oxygen from the upstream end of a stream reach to the downstream end of the reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species.

(4) **Recurring Activities.** Since the baseline for applying the antidegradation policy to an individual source is the water quality resulting from the source's currently authorized discharge, and since regularly-scheduled, recurring activities remain subject to water quality standards and the terms and conditions in any applicable federal and state permits, certifications and licenses, the following activities will not be considered new or increasing discharges and will therefore not trigger an antidegradation review under this

rule so long as they do not increase in frequency, intensity, duration or geographical extent:

(c) Maintenance dredging.

(5) **Exemptions to the Antidegradation Requirement**. Some activities may, on a short term basis, cause temporary water quality degradation. However, these same activities may also have substantial and desirable environmental benefits. The following activities and situations fall into this category. Such activities and situations remain subject to water quality standards, and must demonstrate that they have minimized adverse affects to threatened and endangered species in order to be exempt from the antidegradation review under this rule:

(a) *Riparian Restoration Activities*. Activities that are intended to restore the geomorphology or riparian vegetation of a water body, or control invasive species need not undergo an antidegradation review so long as the Department determines that there is a net ecological benefit to the restoration activity. Reasonable measures that are consistent with the restoration objectives for the water body must be used to minimize the degradation;

(b) *Emergency Situations* - The Director or a designee may, for a period of time no greater than 6 months, allow lower water quality without an antidegradation review under this rule in order to respond to public health and welfare emergencies (i.e., a significant threat of loss of life, personal injury or severe property damage); and

(c) *Exceptions* - Exceptions authorized by the Commission under (9) of this rule.

(6) **High Quality Waters Policy.** Where the existing water quality meets or exceeds those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses, that level of water quality must be maintained and protected. However, the Environmental Quality Commission, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, and with full consideration of sections (2) and (9) of this rule, and 340-041-0007(5), may allow a lowering of water quality in these high quality waters if it finds:

(b) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference; and

(d) Federal threatened and endangered aquatic species will not be adversely affected.

(7) **Water Quality Limited Waters Policy**. Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.

(8) **Outstanding Resource Waters Policy.** Where existing high quality waters constitute an outstanding State or national resource such as those waters designated as extraordinary resource waters, or as critical habitat areas, the existing water quality and water quality

values must be maintained and protected, and classified as "Outstanding Resource Waters of Oregon."

(a) The Commission may specially designate high quality water bodies to be classified as Outstanding Resource Waters in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those water bodies. The Department will develop a screening process and establish a list of nominated water bodies for Outstanding Resource Waters designation in the Biennial Water Quality Status Assessment Report (305(b) Report). The priority water bodies for nomination include:

(A) Those in State and National Parks;

(D) Those in State and National Wildlife Refuges; and
(E) Those in federally designated wilderness areas.

(9) Exceptions. The Commission or Department may grant exceptions to this rule so long as the following procedures are met:

(a) In allowing new or increased discharged loads, the Commission or Department must make the following findings:

(A) The new or increased discharged load will not cause water quality standards to be violated;

(B) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference; and

(C) The new or increased discharged load will not unacceptably threaten or impair any recognized beneficial uses or adversely affect threatened or endangered species.

(D) (iv) Under extraordinary circumstances to solve an existing, immediate and critical environmental problem, the Commission or Department may, after the completion of a TMDL but before the water body has achieved compliance with standards, consider a waste load increase for an existing source on a receiving stream designated water quality limited under OAR 340-041-0002(62)(a). This action must be based on the following conditions:

(III) That an evaluation of the requested increased load shows that this increment of load will not have an unacceptable temporary or permanent adverse effect on beneficial uses or adversely affect threatened or endangered species; and

340-041-0007
Statewide Narrative Criteria

(2) Where a less stringent natural condition of a water of the State exceeds the numeric criteria set out in this Division, the natural condition supersedes the numeric criteria and becomes the standard for that water body. However, there are special restrictions, described in OAR 340-041-0004(9)(a)(C)(iii), that may apply to discharges that affect dissolved oxygen.

340-041-0016
Dissolved Oxygen

(1) (a) For water bodies identified as active spawning areas in the places and times indicated on the following Tables and Figures set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, 121B, 180B, 201B and 260B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B,(as well as any active spawning area used by resident trout species), the following criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures:

(C) The spatial median intergravel dissolved oxygen concentration must not fall below 8.0 mg/l.

340-041-0028
Temperature

(2) **Policy.** It is the policy of the Commission to protect aquatic ecosystems from adverse warming and cooling caused by anthropogenic activities. The Commission intends to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic habitat, and to control extremes in temperature fluctuations due to anthropogenic activities. The Commission recognizes that some of the State's waters will, in their natural condition, not provide optimal thermal conditions at all places and at all times that salmonid use occurs. Therefore, it is especially important to minimize additional warming due to anthropogenic sources. In addition, the Commission acknowledges that control technologies, best management practices and other measures to reduce anthropogenic warming are evolving and that the implementation to meet these criteria will be an iterative process. Finally, the Commission notes that it will reconsider beneficial use designations in the event that man-made obstructions or barriers to anadromous fish passage are removed and may justify a change to the beneficial use for that water body.

(3) **Purpose**. The purpose of the temperature criteria in this rule is to protect designated temperature-sensitive, beneficial uses, including specific salmonid life cycle stages in waters of the State.

(4) **Biologically Based Numeric Criteria.** Unless superseded by the natural conditions criteria described in Section (8) of Oregon's rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:

(a) The seven-day-average maximum temperature of a stream identified as having

salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;

(b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to OAR 340-041-340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);

(c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);

(d) The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to OAR 340-041-0340: Tables 101B and 121B, and Figures 151A, 170A, and 340A, may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). In addition, these water bodies must have cold water refugia that is sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern;

(e) The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use on subbasin maps and tables set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 120B, 140B, 190B, and 250B, and Figures 180A, 201A, and 260A may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit);

(f) The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130B, 151B, 160B, 170B, 180A, 201A, 260A, 310B, and 340B, may not exceed 12.0 degrees Celsius (53.6 degrees Fahrenheit). From August 15 through May 15, in bull trout spawning waters below Clear Creek and Mehlhorn reservoirs on the upper Clear Creek (Pine subbasin), below Laurance Lake on the Middle Fork Hood River and below Carmen reservoir on the upper McKenzie River there may be no more than a 0.3 degrees Celsius (0.5 degrees Fahrenheit) increase between the water temperature immediately upstream of the reservoir and the water temperature immediately downstream of the spillway when the ambient seven-day-average maximum stream temperature is 9 degrees Celsius or greater, and no more than a 1.0 degrees Celsius (1.8 degrees Fahrenheit) increase when the seven-day-average stream temperature is less than 9 degrees Celsius.

(5) Unidentified Tributaries. For waters that are not identified on the fish use maps and tables referenced in Section (4) of this rule, the applicable criteria for these waters are the same criteria as is applicable to the nearest downstream water body depicted on the

applicable map.

(8) **Natural Conditions Criteria**. Where the department determines that the natural thermal potential of all or a portion of a water body exceeds the biologically-based criteria in Section (4) of this rule, the natural thermal potential temperatures supersede the biologically-based criteria, and are deemed to be the applicable temperature criteria for that water body.

(11) **Protecting Cold Water**.

(a) Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in Section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead or bull trout are present.

(b) A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:

(A) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 degrees Celsius above the 60 day average; or

(B) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under Subsection (4)(a) of this rule, is less than 10 degrees Celsius, the allowable increase is 1.0 degrees Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.

(c) The cold water protection narrative criteria in subsection (a) of this rule does not apply if:

(A) There are no threatened or endangered salmonids currently inhabiting the water body;

(B) The water body has not been designated as critical habitat; and

(C) The colder water is not necessary to ensure that downstream temperatures achieve and maintain compliance with the applicable temperature criteria.

(12) **Implementation of the Temperature Criteria**

(b) **Human Use Allowance** - Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:

(A) Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the temperature mixing zone, whichever is more restrictive; or

(B) Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.

(C) Point sources must be in compliance with the additional mixing zone requirements set out in OAR 340-041-0053(2)(d).

(c) **Air Temperature Exclusion**. A water body that only exceeds the criteria set out in this rule when the exceedance is attributed to daily maximum air temperatures that exceed the 90th percentile value of annual maximum seven-day average maximum air temperatures calculated using at least 10 years of air temperature data, will not be listed on the section 303(d) list of impaired waters and sources will not be considered in violation of this rule.

(13) **Site-Specific Criteria**. The Department may establish, by separate rule-making, alternative site-specific criteria for all or a portion of a water body that fully protects the designated use.

(a) These site-specific criteria may be set on a seasonal basis as appropriate.

(b) The Department may use, but is not limited by the following considerations when calculating site-specific criteria:

(A) Stream flow;

(B) Riparian vegetation potential;

(C) Channel morphology modifications;

(D) Cold water tributaries and groundwater;

(E) Natural physical features and geology influencing stream temperatures; and

(F) Other relevant technical data.

(c) DEQ may consider the thermal benefit of increased flow when calculating the site-specific criteria.

(d) Once established and approved by EPA, the site-specific criteria will be the applicable criteria for the water bodies affected.

340-041-0053
Mixing Zones

(a) A point source for which the mixing zone is established may not cause or significantly contribute to any of the following:

(b) A point source for which the mixing zone is established may not cause or significantly contribute to any of the following conditions outside the boundary of the mixing zone:

(B) Exceedances of any other water quality standards under normal annual low flow conditions.

(d) **Temperature Thermal Plume Limitations** - Temperature mixing zones and effluent limits authorized under OAR 340-041-0028(12)(b) will be established to prevent or minimize the following adverse effects to salmonids inside the mixing zone:

(A) Impairment of an active salmonid spawning area where spawning redds are located or likely to be located. This adverse effect is prevented or minimized by limiting potential fish exposure to temperatures of 13 degrees Celsius (55.4 degrees Fahrenheit) or less for salmon and steelhead, and 9 degrees Celsius (48 degrees Fahrenheit) for bull trout;

(B) Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32.0 degrees Celsius (89.6 degrees Fahrenheit) or more to less than 2 seconds);

(C) Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25.0 degrees Celsius (77.0 degrees Fahrenheit) or more to less than 5 percent of the cross section of 100 percent of the 7Q10 low flow of the water body; The Department may develop additional exposure timing restrictions to prevent thermal shock; and

(D) Unless the ambient temperature is 21.0 degrees Celsius or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21.0 degrees Celsius (69.8 degrees Fahrenheit) or more to less than 25 percent of the cross section of 100 percent of the 7Q10 low flow of the water body.

340-041-0061
Other Implementation of Water Quality Criteria

(2) **Water Quality Variances**. The Commission may grant point source variances from the water quality standards in this Division where the following requirements are met:

(a) The water quality variance applies only to the point source requesting the variance and only to the pollutant or pollutants specified in the variance; the underlying water quality standard otherwise remains in effect.

(b) A water quality standard variance shall not be granted if:

(A) Standards will be attained by all point source dischargers implementing effluent limitations required under sections 301(b) and 306 of the federal Clean Water Act, and by nonpoint sources implementing cost-effective and reasonable best management practices; or

(B) The variance would likely jeopardize the continued existence of any threatened or endangered species listed under section 4 of the Endangered Species Act, or result in the destruction or adverse modification of such species' critical habitat.

(c) Prior to granting a variance, the point source must demonstrate that attaining the water quality standard is not feasible because:

(A) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(B) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; or

(C) Human-caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; or

(D) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way which would result in the attainment of the use; or

(E) Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like unrelated to water quality, preclude attainment of aquatic life protection uses; or

(F) Controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act would result in substantial and widespread economic and social impact.

(d) **Procedures**. An applicant for a water quality standards variance shall submit a request to the Department. The application shall include all relevant information showing that the requirements for a variance have been satisfied. The burden is on the applicant to demonstrate that the designated use is unattainable for one of the reasons specified in subsection (c) of this rule. If the Department preliminarily determines that grounds exist for granting a variance, it shall provide public notice of the proposed variance and provide an opportunity for public comment.

(A) The Department may condition the variance on the performance of such additional studies, monitoring, management practices, and other controls as may be deemed necessary. These terms and conditions will be incorporated into the applicant's NPDES permit or Department order.

(B) A variance may not exceed 3 years or the term of the NPDES permit, whichever is less. A variance may be renewed if the applicant reapplies and demonstrates that the use in question is still not attainable. Renewal of the variance may be denied if the applicant does not comply with the conditions of the original variance, or otherwise does not meet the requirements of this section.

(C) DEQ approval of a variance for a point source is not effective under the federal Clean Water Act until submitted to and approved by EPA.

340-041-0101
Beneficial Uses to Be Protected in the Main Stem Columbia River

(1) Water quality in the main stem Columbia River (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 101A (November 2003).

(2) Designated fish uses to be protected in the main stem Columbia River are shown in Table 101B (November 2003).

340-041-0121
Beneficial Uses to Be Protected in the Main Stem Snake River

(1) Water quality in the main stem Snake River (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 121A (November 2003).

(2) Designated fish uses to be protected in the main stem Snake River are shown in Table 121B (November 2003).

340-041-0130
Beneficial Uses to Be Protected in the Deschutes Basin

(1) Water quality in the Deschutes Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 130A (November 2003).

(2) Designated fish uses to be protected in the Deschutes Basin are shown in Figures 130A and 130B (November 2003).

340-041-0140
Beneficial Uses to be Protected in Goose and Summer Lake Basins

(1) Water quality in the Goose and Summer Lake Basins (see Figure 1) must be managed to protect the designated beneficial uses shown in 140A (November 2003).

(2) Designated fish uses to be protected in the Goose and Summer Lake Basins are shown in Table 140B (November 2003).

340-041-0151
Beneficial Uses to Be Protected in the Grande Ronde Basin

(1) Water quality in the Grande Ronde Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 151A (November 2003).

(2) Designated fish uses to be protected in the Grande Ronde Basin are shown in Figures 151A and 151B(November 2003).

340-041-0160
Beneficial Uses to Be Protected in the Hood Basin

(1) Water quality in the Hood Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 160A (November 2003).

(2) Designated fish uses to be protected in the Hood Basin are shown in Figures 160A and 160B (November 2003).

340-041-0170
Beneficial Uses to Be Protected in the John Day Basin

(1) Water quality in the John Day Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 170A (November 2003).

(2) Designated fish uses to be protected in the John Day Basin are shown in Figures 170A and 170B (November 2003).

340-041-0180
Beneficial Uses to Be Protected in the Klamath Basin

(1) Water quality in the Klamath Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 180A(November 2003).

(2) Designated fish uses to be protected in the Klamath Basin are shown in Figure 180A (November 2003).

340-041-0190
Beneficial Uses to Be Protected in the Malheur Lake Basin

(1) Water quality in the Malheur Lake Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 190A (November 2003).

(2) Designated fish uses to be protected in the Malheur Lake Basin are shown in Table 190B(November 2003).

340-041-0201
Beneficial Uses to Be Protected in the Malheur River Basin

(1) Water quality in the Malheur River Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 201A (November 2003).

(2) Designated fish uses to be protected in the Malheur River Basin are shown in Figure 201A (November 2003).

340-041-0220
Beneficial Uses to Be Protected in the Mid Coast Basin

(1) Water quality in the Mid Coast Basin (see Figure 1) may be managed to protect the designated beneficial uses shown in Table 220A(November 2003).

(2) Designated fish uses to be protected in the Mid Coast Basin are shown in Figures 220A and 220B (November 2003).

340-041-0230
Beneficial Uses to Be Protected in the North Coast Basin

(1) Water quality in the North Coast Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 230A (November 2003).

(2) Designated fish uses to be protected in the North Coast Basin are shown in Figures 230A and 230B (November 2003).

340-041-0250
Beneficial Uses to Be Protected in the Owyhee Basin

(1) Water quality in the Owyhee Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 250A (November 2003).

(2) Designated fish uses to be protected in the Owyhee Basin are shown in Table 250B (November 2003).

340-041-0260
Beneficial Uses to Be Protected in the Powder/Burnt Basins

(1) Water quality in the Powder/Burnt Basins (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 260A (November 2003).

(2) Designated fish uses to be protected in the Powder/Burnt Basins are shown in Figure 260A (November 2003).

340-041-0271
Beneficial Uses to Be Protected in the Rogue Basin

(1) Water quality in the Rogue Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 271A (November 2003).

(2) Designated fish uses to be protected in the Rogue Basin are shown in Figures 271A and 271B (November 2003).

340-041-0286
Beneficial Uses to Be Protected in the Sandy Basin

(1) Water quality in the Sandy Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 286A (November 2003).

(2) Designated fish uses to be protected in the Sandy Basin are shown in Figures 286A and 286B (November 2003).

340-041-0300
Beneficial Uses to Be Protected in the South Coast Basin

(1) Water quality in the South Coast Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 300A (November 2003).

(2) Designated fish uses to be protected in the South Coast Basin are shown in Figures 300A and 300B (November 2003).

340-041-0310
Beneficial Uses to Be Protected in the Umatilla Basin

(1) Water quality in the Umatilla Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 310A (November 2003).

(2) Designated fish uses to be protected in the Umatilla Basin are shown in Figures 310A and 310B (November 2003).

340-041-0320
Beneficial Uses to Be Protected in the Umpqua Basin

(1) Water quality in the Umpqua Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 320A (November 2003).

(2) Designated fish uses to be protected in the Umpqua Basin are shown in Figures 320A and 320B (November 2003).

340-041-0330
Beneficial Uses to Be Protected in the Walla Walla Basin

(1) Water quality in the Walla Walla Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 330A (November 2003).

(2) Designated fish uses to be protected in the Walla Walla Basin are shown in Figures 310A and 310B (November 2003).

340-041-0340
Beneficial Uses to Be Protected in the Willamette Basin

(1) Water quality in the Willamette Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 340A (November 2003).

(2) Designated fish uses to be protected in the Willamette Basin are shown in Figures 340A and 340B (November 2003).

2. EPA'S BASIS FOR APPROVAL OF NEW OR REVISED OREGON WATER QUALITY STANDARDS UNDER SECTION 303(c) OF THE CLEAN WATER ACT

The following discussion provides the primary basis for EPA's action in approving the Oregon water quality standards specified below. Other documents supporting the decision are found in the record to this approval action. Also included is EPA's response to some of the public comments that have been raised during the public comment periods on Oregon and EPA's proposed rules.

While EPA is not required to respond to public comments when it approves or disapproves new or revised state water quality standards, EPA does explain the bases for its decisions in the record for the decision. For this action, EPA thought that the most efficient way to ensure it fully explained the bases for its action today was to review the public comments on rules proposed by Oregon and EPA, with particular focus on the comments of the plaintiffs in *NWEA v. EPA*, 268 F.Supp.2d 1255 (D. Or. 2003), which precipitated today's action. Thus, this technical support document summarizes and responds to some of the major comments that Oregon and/or EPA received on their proposed rules.

2.1 DEFINITIONS [OAR 340-041-0002]

(2) "Ambient Stream Temperature" means the stream temperature measured at a specific time and place. The selected location for measuring stream temperature must be representative of the stream in the vicinity of the point being measured.

Action: EPA approves Oregon's definition of "Ambient Stream Temperature" because it is scientifically reasonable.

(4) "Applicable Criteria" means the biologically-based temperature criteria set out in OAR 340-041-0028(4), the superseding cold water protection criteria as described in OAR 340-041-0028(12), or the superseding natural condition criteria as described in OAR 340-041-0028(8). In addition, the applicable criteria may also be site-specific criteria approved by EPA. A subbasin may have a combination of applicable temperature criteria derived from some or all of these numeric and narrative criteria.

Action: EPA approves Oregon's definition of "Applicable Criteria" because it is comprehensive and establishes that, when appropriate, cold water protection criteria, natural conditions criteria, or site-specific criteria will supercede the biologically-based temperature criteria as the "Applicable Criteria."

(7) "Basin" means a third field hydrologic unit as identified by the U.S. Geological Survey.

Action: EPA approves Oregon's definition of "Basin" because it is scientifically reasonable.

(9) "Cold-Water Aquatic Life" means aquatic organisms that are physiologically restricted to cold water, including but not limited to native salmon, steelhead, mountain whitefish, char (including bull trout), and trout.

Action: EPA approves Oregon's definition of "Cold-Water Aquatic Life" because it is scientifically reasonable. See discussion of the Temperature provision (OAR 340-41-0028).

(10) "Cold Water Refugia" means those portions of a water body where, or times during the diel temperature cycle when, the water temperature is at least 2 degrees Celsius colder than the daily maximum temperature of the adjacent well mixed flow of the water body.

Action: EPA approves Oregon's definition of "Cold Water Refugia for the same reason it approves the Salmon and Steelhead Migration: 20C and Sufficiently Distributed Cold Water Refugia provision (OAR 340-41-0028 (4)(d)).

(12) "Cool-Water Aquatic Life" means aquatic organisms that are physiologically restricted to cool waters, including but not limited to native sturgeon, pacific lamprey, suckers, chub, sculpins and certain species of cyprinids (minnows).

Action: EPA approves Oregon's modified definition of "Cool-Water Aquatic Life" because it is scientifically reasonable.

(13) "Core Cold Water Habitat Use" means waters that are expected to maintain temperatures within the range generally considered optimal for salmon and steelhead rearing, or that are suitable for bull trout migration, foraging and sub-adult rearing that occurs during the summer. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A.

Action: EPA approves Oregon's definition of "Core Cold Water Habitat Use" for the same reason it approves the Temperature–Biologically Based Numeric Criteria– Core Cold Water Habitat Use provision (OAR 340-041-028 (4)(b)).

(14) "Critical Habitat" means those areas that support rare, threatened or endangered species, or serve as sensitive spawning and rearing areas for aquatic life as designated by the U.S. Fish and Wildlife Service or NOAA Fisheries pursuant to the Endangered Species Act (16 USC 1531).

Action: EPA approves Oregon's modified definition of "Critical Habitat" because it is consistent with EPA's understanding of the definition as it is written in the Endangered Species Act.

(31) "Migration Corridors" mean those waters that are predominantly used for salmon and steelhead migration during the summer, and where there is little or no anadromous salmonid rearing occurring in the months of July and August. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121Band Figures 151A, 170A, and 340A

Action: EPA approves Oregon's definition of "Migration Corridors" for the same reason it approves the Temperature–Biologically Based Criteria–Migration Corridors provision (OAR 340-041-0028 (4)(d)).

(34) "Natural Conditions" means conditions or circumstances affecting the physical, chemical, or biological integrity of a water of the State that are not influenced by past or present anthropogenic activities. Disturbances from wildfire, floods, earthquakes, volcanic or geothermal activity, wind, insect infestation, diseased vegetation are considered natural conditions.

Action: EPA approves Oregon's definition of "Natural Conditions" for the same reason it approves the Statewide Narrative Criteria (OAR 340-041-0007(2)) and Temperature-Natural

Conditions Criteria (OAR 340-41-0028 (8)).

(35) "Natural Thermal Potential" means the determination of the thermal profile of a water body using best available methods of analysis and the best available information on the site potential riparian vegetation, stream geomorphology, stream flows and other measures to reflect natural conditions.

Action: EPA approves Oregon's definition of "Natural Thermal Potential" because it is scientifically reasonable, and it is consistent with the definition found in the *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* ("Temperature Guidance") (EPA 910-B-03-002, April 2003).[1] Additionally, EPA approves this definition for the same reason it approves the Temperature–Natural Conditions Criteria provision (OAR 340-41-0028(8)).

(36) "Nonpoint Sources" means any source of water pollution other than a point source. Generally, a nonpoint source is a diffuse or unconfined source of pollution where wastes can either enter into, or be conveyed by the movement of water, to waters of the State.

Action: EPA approves Oregon's modified definition of "Nonpoint Source" because it is consistent with the Clean Water Act.

(40) "Point Source" means a discernable, confined and discrete conveyance, including but not limited to a pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft, or leachate collection system, from which pollutants are or may be discharged. Point source does not include agricultural storm water discharges and return flows from irrigated agriculture.

Action: EPA approves Oregon's definition of "Point Source" because it is consistent with the Clean Water Act.

(45) "Salmon" means chinook, chum, coho, sockeye and pink salmon.

Action: EPA approves Oregon's definition of "Salmon" because it is scientifically reasonable.

(46) "Salmon and Steelhead Spawning Use" means waters that are or could be used for salmon and steelhead spawning, egg incubation and fry emergence. These uses are designated on the following subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B.

Action: EPA approves Oregon's definition of "Salmon and Steelhead Spawning Use" for the same reason it approves the Temperature–Biologically Based Criteria for Salmon and Steelhead Spawning Use provision (OAR 340-041-0028 (4)(a)).

(47) "Salmon and Trout Rearing and Migration Use" means thermally suitable rearing habitat for salmon and steelhead, rainbow and cutthroat trout as designated on subbasin maps set out at OAR 340-041-0101 to OAR 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A,

[1]The Temperature Guidance and the six Technical Issue Papers that serve as the scientific basis for the recommendations in the Guidance are available at www.epa.gov/r10earth/temperature.htm

271A, 286A, 300A, 310A, 320A, and 340A.

Action: EPA approves Oregon's definition of "Salmon and Trout Rearing and Migration Use" for the same reason it approves the Temperature–Biologically Based Criteria for Salmon and Trout Rearing and Migration Use provision (OAR 340-041-0028 (4)(c)).

(48) "Salmonid or Salmonids" means native salmon, trout, mountain whitefish and char (including bull trout). For purposes of Oregon water quality standards, salmonid does not include brook or brown trout since they are introduced species.

Action: EPA approves Oregon's definition of "Salmonid or Salmonids" because it is scientifically reasonable.

(50) "Seven-Day Average Maximum Temperature" means a calculation of the average of the daily maximum temperatures from seven consecutive days, made on a rolling basis.

Action: EPA approves Oregon's definition of "Seven-Day Average Maximum Temperature" because it is consistent with the Clean Water Act and its implementing regulations for reasons discussed in *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* (EPA 910-B-03-002, April 2003).

(52) "Short Term Disturbance" means a temporary disturbance of six months or less where water quality standards may be violated briefly, but not of sufficient duration to cause acute or chronic effects on beneficial uses.

Action: EPA approves Oregon's definition for "Short Term Disturbances" because it is consistent with the Clean Water Act and its implementing regulations, for reasons discussed in the Water Quality Standards Handbook: Second Edition (EPA 823-B-94-005a, August 1994).

(56) "Subbasin" means a fourth field hydrologic unit as identified by the U.S. Geological Survey.

Action: EPA approves Oregon's definition of "Subbasin" because it is scientifically reasonable.

(57) "Summer" means June 1 through September 30 of each calendar year.

Action: EPA approves Oregon's definition of "Summer" because it is scientifically reasonable.

(58) "Threatened or Endangered Species" means aquatic species listed as either threatened or endangered under the federal Endangered Species Act (16 USC 1531 et seq. and Title 50 of the Code of Federal Regulations).

Action: EPA approves Oregon's definition of "Threatened or Endangered Species" because it is consistent with EPA's understanding of the definition as it is written in the Endangered Species Act.

2.2 ANTIDEGRADATION [OAR 340-041-0004]

Prior to this new rulemaking, Oregon had adopted an antidegradation policy consistent with 40 C.F.R. Part 131. EPA's regulations also require states to identify methods for implementing these regulations. EPA interprets its regulation as giving states the choice of including those

methods in regulation or outside of regulation. EPA reviews new or revised antidegradation implementation methods that are contained in regulations as new or revised water quality standards for consistency with the CWA and 40 C.F.R. § 131.12. In reviewing a new or revised water quality standard, EPA also considers materials outside of regulation that are intended to implement the policy to understand whether the antidegradation regulations within the water quality standards are consistent with the CWA and 40 C.F.R. § 131.12. Therefore, EPA has reviewed the antidegradation provisions including aspects of those provisions relating to implementation that are contained in the regulation as new or revised water quality standards under section 303(c) of the CWA. In conducting this review of the new or revised standards, EPA has considered the State of Oregon's March 2001 Internal Management Directive for Implementing its Antidegradation Policy.

EPA reviews state antidegradation "policies" (although the regulation at 40 C.F.R. § 131.12 refers to a requirement that states have "policies" EPA interprets this to mean binding requirements or regulations) for their consistency with 40 C.F.R. § 131.12. By its terms, 40 C.F.R. Part 131 gives states considerable discretion with respect to their antidegradation regulations (63 FR 36780, July 7, 1998). Further, 40 C.F.R. § 131.12 and § 131.6(d) do not specify minimums regarding antidegradation implementation methods, but simply require that states are required to identify methods for their implementation. EPA's regulations provide a great deal of discretion to states and authorized tribes regarding the amount of specificity needed in antidegradation implementation methods. In reviewing implementation methods, EPA looks to see whether they render the antidegradation "policy" (requirements) inconsistent with 40 C.F.R. § 131.12 (Water Quality Standard Handbook (2nd Ed. 1994) p. 4-2 ; 68 FR 58775). The regulations do not specify minimum elements for such methods, but do require that such methods are consistent with the intent of the antidegradation policy.

Oregon's New and Revised Water Quality Standards:

Oregon DEQ has adopted the following new language regarding antidegradation in its water quality standards regulations. All underlined text indicates the actual change or revision to the rule unless otherwise noted. Additionally, some language is added for context that has not been changed. Below is a discussion of the basis for EPA's approval of each new or revised provision.

(1) Purpose. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary <u>further</u> degradation from <u>new or increased</u> point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to <u>ensure the full protection of</u> all existing beneficial uses. The standards and policies set forth in OAR 340-041-0007 through 340-041-0350 are intended to <u>supplement</u> the Antidegradation Policy.

Action: EPA approves the additions to this language and finds that they are consistent with existing use protections as required by 40 C.F.R. § 131.12(a)(1) because the language provides that Oregon will protect all existing beneficial uses. EPA also approves the additions to this language and finds that it is consistent with 40 C.F.R. § 131.12(a)(2). EPA interprets the regulation at 40 C.F.R. § 131.12(a)(2) to trigger an antidegradation review only where there is a regulated discharge that would "lower" water quality. Oregon's reference to conducting a Tier 2 review where there is a new or increased discharge is consistent with EPA's interpretation of when Tier 2 review is required (WQS Handbook p. 4-7).

(2) Growth Policy. In order to maintain the quality of waters in the State of Oregon, it is the general policy of the <u>Commission</u> to require that growth and development be accommodated by

increased efficiency and effectiveness of waste treatment and control such that measurable future discharged waste loads from existing sources do not exceed presently allowed discharged loads except as provided in section (3) through (9) of this rule.

Action: EPA approves the additions to this language for the same reasons it approves the exceptions cross referenced in sections (3) through (9).

(3) Nondegradation Discharges. The following new or increased discharges are subject to this Division. However, because they are not considered degradation of water quality, they are therefore, not required to undergo an antidegradation review under this rule:

EPA has long interpreted its regulation governing high quality waters to authorize states to allow a *de minimis* amount of lowering of water quality without triggering Tier 2 review. In its 1998 ANPRM, the EPA stated that "[w]here the degradation is not significant, the antidegradation review is typically terminated for that proposed activity," and that "[a]pplying antidegradation requirements only to activities that will result in significant degradation is a useful approach that allows States ... to focus limited resources where they may result in the greatest environmental protection" (63 FR 36742, 36783; *Ovec v. Whitman*, 279 F.Supp.2d 732, 769 (S.D. West Va. 2004))(concluding that EPA's regulation does not preclude a state from permitting some *de minimis* amount of pollution prior to imposing Tier 2 review).

(a) Discharges into Mixing Zones. Pollutants discharged into the portion of a water body that has been included in previous mixing zone for a permitted source including zones of initial dilution, are not considered to be a reduction in water quality, so long as the mixing zone is established in accordance with OAR 340-041-0053, there are no other overlapping mixing zones from other point sources, and the discharger complies with all effluent limits set out in its NPDES permit;

Action: EPA approves this provision which allows discharges into a mixing zone without a Tier 2 review as consistent with EPA regulations because mixing zones are limited areas where water quality criteria may be exceeded without impairing the designated use of the waterbody as a whole. The water quality within the mixing zone may be lower than that which exists throughout the waterbody because there is a scientifically defensible basis to determine that the limited effects within the mixing zone will not impair the designated use of the waterbody as a whole. This provision only speaks to pollutants within a mixing zone; it does not exempt from Tier 2 review a lowering that would occur at the edge of the mixing zone; and if such a lowering occurs at that point, Tier 2 antidegradation review will apply.

(b) Water Conservation Activities. An increase in a permitted effluent pollutant concentration is not considered a reduction in water quality so long as the increase occurs as the result of a water conservation activity, the total mass load of the pollutant is not increased, and the concentration increase has no adverse effect on either beneficial uses or threatened or endangered species in the water body; and

Action: EPA approves this provision which allows discharges as a result of water conservation activities to increase concentrations with the caveats listed above because EPA defers to the State's judgement that water conservation activities are so important that where they are properly implemented they would always meet the test of being necessary to accommodate important economic and social development in the area where the waters are located, and independently, because in most cases this will not result in a lowering of water quality. Regarding the first basis, EPA's Tier 2 requirements do not prohibit the lowering of water quality (although the CWA does prohibit lowering below

that necessary to meet water quality standards), but rather provide a public process to consider whether giving away some of the assimilative capacity is necessary to accommodate important economic or social development. In the case of discharges where an increase in pollutant concentration may occur as the result of water conservation activities, the discharge will be authorized pursuant to a public permitting process. Therefore, this provision gives the State authority to determine that the importance of the water conservation activity is sufficient not to require additional public Tier 2 review. Because the permitting process may already balance the need for the water conservation activity with its effects on water quality, requiring Tier 2 review could be duplicative.

Another reason EPA is approving this provision is because discharges authorized under this provision with the cap on the waterbody load will not constitute a lowering of water quality in the waterbody. Because this provision is applicable to increases in pollutant concentrations due solely to water conservation activities, and requires that the total mass load of the pollutant not be increased, EPA has determined that this increase in pollutant concentration will not have the effect of lowering water quality sufficiently to trigger the need for Tier 2 review. Further, in cases where dischargers constitute a relatively small percentage of the receiving water flow, any resulting increase in pollutant concentration within the waterbody as a whole will be minimal.

Finally, even if Oregon required proposed discharge increases in pollutant concentrations to undergo a Tier 2 review, there would be few to no alternatives to water conservation activities. Water conservation activities, by their definition, encompass changes to processes that result in less water being used in the discharger's processes, and consequently, pollutants are less diluted. As such, EPA has determined it would be likely that even if Oregon were to require a Tier 2 analysis, the State would consistently arrive at the conclusion that no alternatives are available and the water conservation measure are necessary to accommodate important economic and social development.

(c) Temperature. Insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality.

Action: EPA approves this provision as consistent with 40 C.F.R. § 131.12(a)(2) because allowing a 0.3 ^{o}C increase in temperature is not significant for the same reasons EPA is approving the human use allowance described in Section 2.8 (Human Use Allowance) of this document. The data supporting the numeric criteria referenced in the Temperature Guidance could just as well support each criterion with the addition of this amount of temperature. It is true that the State and EPA must judge at what point the criteria are no longer protective, but EPA's judgment is that an addition of 0.3 ^{o}C to each criterion value will not affect aquatic life based on the temperature data it has before it.

(d) Dissolved oxygen. Up to a 0.1 mg/L decrease in dissolved oxygen from the upstream reach of a stream to the downstream end of the reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species.

Action: EPA approves this provision as consistent with 40 C.F.R. § 131.12(a)(2). Allowing a 0.1 mg/L decrease in dissolved oxygen (DO) is well within the natural variability of DO concentrations that occur daily that are nevertheless within the range of DO that will support aquatic life. Thus, a lowering of DO up to 0.1 mg/L is not a significant lowering that would required Tier 2 antidegradation review under 40 CFR § 131.12(a)(2). DO concentrations can vary widely, both spatially and temporally due to

biological (oxygen produced by plants and taken up by aquatic life), chemical (interaction with the atmosphere and other water quality parameters), and physical factors (e.g., percent of fine sediments, habitat characteristics, and stream velocities) (ODEQ 1995). Studies from the literature illustrate the variability in aquatic dissolved oxygen through mean IGDO measurements in natural redds that varied from 3-11 mg/L (Koski 1965 (as cited in ODEQ Dissolved Oxygen final paper); Hollender 1981– See Section 2.4 Intergravel Dissolved Oxygen).

In addition, 0.1 mg/L is within the measurement error of dissolved oxygen equipment. While some advanced equipment can monitor at a greater level of precision, studies reviewed in the literature for Section 2.4 of this document generally reported dissolved oxygen levels only to a level of 0.1 mg/L. Further, EPA's Ambient Aquatic Life Water Quality Criteria for Dissolved Oxygen (Saltwater): Cape Cod to Cape Hatteras (2000) states that "Many programs that monitor coastal DO with electronic equipment cannot measure DO to better than 0.5 mg/L due to limitations of instrument accuracy and resolution or sampling design (e.g., Strobel et al., 1995; Strobel and Heltshe, 1999; Summers et al., 1997, as cited in EPA Criteria for Dissolved Oxygen, 2000).

(4) Recurring Activities. Since the baseline for applying the antidegradation policy to an individual source is the water quality resulting from the source's currently authorized discharge, and since regularly-scheduled, recurring activities remain subject to water quality standards and the terms and conditions in any applicable federal and state permits, certifications and licenses, the following activities will not be considered new or increasing discharges and will therefore not trigger an antidegradation review under this rule so long as they do not increase in frequency, intensity, duration or geographical extent:

(a) Rotating grazing pastures,

(b) Agricultural crop rotations, and

(c) Maintenance dredging.

Action: EPA is not acting on section 4 (Recurring Activities) as it applies to nonpoint source activities as EPA does not regulate nonpoint source activities. *American Wildlands v. Browner*, 260 F.3d 1192 (10th Cir. 2001). To the extent that this provision relates to regulated discharges, EPA approves this provision because it is reasonable to conclude that recurring activities do not increase in frequency, intensity, duration, and geographical extent and are not new or increased discharges. Therefore, these recurring activities do not constitute a lowering and thus are not required to undergo Tier 2 review.

(5) Exemptions to the Antidegradation Requirement. Some activities may, on a short term basis, cause temporary water quality degradation. However, these same activities may also have substantial and desirable environmental benefits. The following activities fall into this category. Such activities and situations remain subject to water quality standards and must demonstrate that they have minimized adverse affects to and the protections afforded to threatened and endangered species in order to be exempt from an antidegradation review under this rule:

(a) Riparian Restoration Activities. Activities that are intended to restore the geomorphology or riparian vegetation of a water body, or control invasive species need not undergo an antidegradation review so long as the Department determines that there is a net ecological benefit to the restoration activity. Reasonable measures that are

consistent with the restoration objectives for the water body must be used to minimize the degradation;

(b) Emergency Situations. The Director or a designee may, for a period of time no greater than 6 months, allow lower water quality without an antidegradation review under this rule in order to respond to public health and welfare emergencies (i.e., a significant threat of loss of life, personal injury or severe property damage), and

Action: EPA approves this provision because it is consistent with 40 C.F.R. § 131.12(a)(2) because short term events are not considered a "lowering" of water quality subject to Tier 2 review. Although no lowering of water quality is permitted in an ONRW, EPA has interpreted its regulation to allow short term lowering of quality in an ONRW (WQS Handbook p. 4-10; *NWF v. Browner*, 127 F.3d 1126, 1127 (D.C. Cir. 1997))("'Tier III' prohibits any degradation of existing water quality standards with a limited exception for short-term or temporary changes in water quality"). EPA further states in the WQS Handbook (p. 4-10) that "Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses in the ONRW. It is difficult to give an exact definition of 'temporary' and 'short-term' because of the variety of activities that might be considered. However, in rather broad terms, EPA's view of temporary is weeks and months, not years." In addition, Oregon's definitions section includes the following: "'Short Term Disturbance' means a temporary disturbance of six months or less where water quality standards may be violated briefly, but not of sufficient duration to cause acute or chronic effects on beneficial use."

With respect to restoration activities, EPA has determined that the State would have already authorized restoration activities through a public process that would have effectively weighed whether the activity is necessary to accommodate important social or economic concern, and a Tier 2 review in this case would be unnecessary, duplicative, and result in needless delays. In order to avoid such a needless duplicative review, as provided in CWA section 101(f), EPA approves this exemption from Tier 2 review as reasonable and consistent with the CWA.

With respect to activities to control an invasive species, or an emergency situation, EPA also notes that the State's decision that the activity is necessary to accommodate important social or economic concerns would be made in the affirmative, and thus recognizing this, it is reasonable for EPA not to require such a review.

(c) Exceptions. Exceptions authorized by the Commission under (9) of this rule.

Action: EPA approves this provision for the reasons discussed immediately following section (9).

(6) High Quality Waters Policy. Where the existing water quality meets or exceeds those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses, that level of water quality must be maintained and protected. However, The Environmental Quality Commission, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning process, and with full consideration of sections (2) and (9) of this rule, and OAR 340-041-0007(5), may allow a lowering of water quality in these high quality waters if it finds:

(a) No other reasonable alternatives exist except to lower water quality; and

(b) The action is necessary and benefits of the lowered water quality action outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference;

(c) All water quality standards will be met and beneficial uses protected; and

(d) Federal threatened and endangered aquatic species will not be adversely affected.

Action: EPA approves the new and revised language in this provision as consistent with 40 C.F.R. § 131.12(a)(2) because the economic test specified in subsection (b) and the determination specified in subsection (a) above are reasonable means of implementing the regulatory requirement that "allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located." EPA has stated in the ANPRM that the essence of a Tier 2 review is an alternatives analysis and a determination of whether the costs of any alternatives are reasonable. The goal is to identify and implement the least degrading option with a reasonable cost (63 FR 36784). In its Directive, Oregon has defined "necessary" in a manner that requires a thorough alternatives analysis and has chosen to define "important" as social and economic benefits that outweigh the environmental costs. This is one reasonable manner of applying EPA's regulation.

EPA notes that Oregon has not made changes to its definition of high quality waters, and that its previous language is almost exactly the same as the requirements of 40 C.F.R. § 131.12. EPA notes that Oregon includes within its definition of high quality waters not only waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water but waters that meet that quality. As EPA reviewed the changes Oregon made to its standard, EPA also considered Oregon's March 2001 Directive to understand the meaning of its antidegradation regulation. In that Directive, EPA notes that Oregon used a designational approach to defining high quality waters, defining those as waters that meet or exceed criteria (*i.e.*, waters that are not impaired) for all parameters. EPA has determined that this approach is within the discretion afforded states under 40 C.F.R. § 131.12(a)(2). EPA supports the designational approach, whereby a state may choose to conduct Tier 2 review by determining whether a waterbody is overall high quality (63 FR 36782, 36783, July 7, 1998; *Ovec v. Whitman*, 279 F.Supp.2d 732, 769 (S.D. West Va. 2004))(... the waterbody-by-waterbody approach permits a State to make an overall classification of a particular water body without needing to make a classification for each individual pollutant, and that this approach has the benefit of allowing a State to focus its resources on overall high quality waters). EPA finds Oregon's approach consistent with 40 C.F.R. § 131.12(a)(2) for these reasons, and the reasons EPA proposed such an approach as described in the preamble to its proposed rule for Oregon (68 FR 58758, 58776-77, Oct. 10, 2003).

Alternatively, even if a state was not authorized under EPA's regulation to determine that high quality waters are defined as waters that are not impaired, Oregon's approach is further consistent with 40 C.F.R. § 131.12(a)(2) because under Oregon's approach, Tier 1

waters that have assimilative capacity are required to undergo an analysis under Tier 1 that meets the minimum requirements of a Tier 2 analysis.[2]

(7) Water Quality Limited Waters Policy. Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.

Action: EPA approves this provision for the reasons discussed below immediately following section (9).

(8) Outstanding Resource Waters Policy. Where existing high quality waters constitute an outstanding State or national resource such as those waters designated as extraordinary resource waters, or as critical habitat areas, the existing water quality and water quality values must be maintained and protected, and classified as "Outstanding Resource Waters of Oregon."

(a) The Commission may specially designate high quality waterbodies to be classified as Outstanding Resource Waters in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those water bodies. The Department will develop a screening process and establish a list of nominated water bodies for Outstanding Resource Waters designation in the Biennial Water Quality Status Assessment Report (305(b) Report). The priority water bodies for nomination include:

(A) Those in State and National Parks;
(B) National Wild and Scenic Rivers;
(C) State Scenic Waterways;
(D) Those in State and National Wildlife Refuges; and
(E) Those in federally designated wilderness areas.

(b) The Department will bring to the Commission a list of water bodies that are proposed for designation as Outstanding Resource Waters at the time of each triennial Water Quality Standards Review; and

(c) When designating Outstanding Resource Waters, the Commission may establish the water quality values to be protected and provide a process for determining what activities are allowed that would not affect the outstanding resource values. After the designation, the Commission may not allow activities that may lower water quality below the level established except on a short term basis to respond to public health and welfare emergencies, or to obtain long-term water quality improvements.

Action: EPA views this provision as essentially unchanged and is therefore not acting on this provision except to approve the bolded language which is consistent with 40 C.F.R. §

[2] EPA notes that in Oregon's Directive, p. 27, waters not given Tier 2 status, water quality limited waters, must undergo an antidegradation review that requires consideration of alternatives and that the economic benefits of lowering water quality are greater than other uses of the assimilative capacity. This is consistent with Tier 2's requirement that before lowering, the permit authority determine that the proposed activity is necessary and important. "Implementation of this part of the antidegradation policy in the WQLW will be essentially the same as that for HQW." *Id*.

131.12(a)(3) because the new language includes additional examples of waters of exceptional ecological and recreational significance.

(9) Exceptions. The Commission or Department may grant exceptions to this rule so long as the following procedures are met:

(a) In allowing new or increased discharged loads, the Commission or Department must make the following findings:

(A) The new or increased discharged load will not cause water quality standards to be violated;

Action: EPA approves this provision. Even without this provision, the substance of this statement would be required under CWA § 301(b)(1)(c) EPA's implementing regulations.

(B) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference; and

Action: EPA approves this provision. See provision 6 discussion above.

(C) The new or increased discharged load will not unacceptably threaten or impair any recognized beneficial uses or adversely affect threatened or endangered species.

Action: EPA approves this provision. Although EPA expects that attainment of water quality standards will protect listed species, it is not required by, although consistent with 40 C.F.R. § 131.12, to specifically mention listed species.

(D) (iv) Under extraordinary circumstances to solve an existing, immediate, and critical environmental problem, that the Commission or Department may, after the completion of a TMDL but before the water body has achieved compliance with standards, consider a waste load increase for an existing source on a receiving stream designated water quality limited under OAR 340-041-0002(62)(a). This action must be based on the following conditions:

(I) That TMDLs, WLAs and LAs have been set; and

(II) That a compliance plan under which enforcement actions can be taken has been established and is being implemented on schedule; and

(III) That an evaluation of the requested increased load shows that this increment of load will not have an unacceptable temporary or permanent adverse effect on beneficial uses or adversely affect threatened or endangered species; and

(IV) That any waste load increase granted under subparagraph (iv) of this paragraph is temporary and does not extend beyond the TMDL

compliance deadline established for the waterbody. If this action will result in a permanent load increase, the action has to comply with sub-paragraphs (i) or (ii) of this paragraph.

Action: With respect to all of these factors, EPA notes that it approves Oregon's use of these as relevant consideration factors. EPA interprets these factors as a supplement to the analyses required under (a) above.

Responses to Significant Comments:

Comment: EPA's approval is subject to antidegradation review. EPA's WQS Handbook at 4-10 says that "a scheduled water quality standards review" is subject to antidegradation review. Last, the State is required to evaluate the effects of new standards on its waters, a requirement that passes to EPA according to its own regulations (40 C.F.R. § 131.20(a); 40 C.F.R. § 131.22(c)).

EPA Response: The requirement in 40 C.F.R. § 131.12 is that States have an antidegradation policy and identify methods for implementing that policy consistent with the minimum requirements in 40 C.F.R. § 131.12. EPA's actions approving a revision to water quality standards are not subject to antidegradation review. Antidegradation reviews occur in the context of particular authorizations to discharge, such as an NPDES authorization. The antidegradation policy would require the permit authority and applicant to undergo an antidegradation review if the discharge would lower water quality as compared to the prior discharge. Antidegradation review only applies in the nonpoint source context if the state chooses to require nonpoint sources to comply with antidegradation, or any part of antidegradation requirements. (EPA does not have regulatory authority over nonpoint sources.) Thus, whether antidegradation applies to nonpoint sources is solely a question of State and Tribal law. Therefore, EPA's approval of Oregon's antidegradation implementation procedures applies only to the extent that the policies and procedures apply to point sources (68 FR 58775-58776; *American Wildlands v. Browner*, 260 F.3d 1192 (10th Cir. 2001)). EPA's statement in the WQS Handbook referenced the regulation at § 131.10(i) which requires that if the state finds that an existing use is not designated, the state is to designate the use of the waterbody to match the existing use. Apart from that, antidegradation applies at the time of specific authorization of discharge, either in an NPDES permit, or if the state chooses to do so, under any authorization required for nonpoint sources if under State law, such authorization requires compliance with antidegradation.

Comment: Oregon should identify implementation methods for Tier 1 to ensure that amphibians are protected as aquatic species under Oregon's water quality standards.

EPA Response: 40 C.F.R. § 131.12 and § 1316(d) gives states discretion as to how detailed their implementation methods for antidegradation provisions must be as long as the implementation methods do not undercut the required elements of the antidegradation policy (WQS Handbook p. 4-2; 63 FR 36780). As Oregon's regulation protects existing uses, Oregon's rules are adequate to protect amphibians where they are documented to be an existing use.

In addition, the aquatic life stages of amphibians are generally considered to be protected by aquatic life criteria. Aquatic life criteria do not necessarily take into account any issues for the terrestrial life stages (*e.g.*, bioaccumulation). In general, aquatic life stages of amphibians would likely be within the range of sensitivity of any other aquatic species used to derive criteria. The only bar to criteria protecting amphibians is likely lack of data during the criteria development process (in that case, EPA or the state may revise criteria as the need arises and at that time look

at new data which may include aquatic life stages of amphibians).

Comment: Any approval of less stringent criteria violates antidegradation requirements and constitutes backsliding.

EPA Response: States may amend their water quality standards as is consistent with the CWA. EPA reviews the revisions for consistency with 40 C.F.R. Part 131. The provisions in CWA sections 402(o) and 303(d) relate to permit issuance and not adoption of water quality standards. The CWA antibacksliding provisions apply separately, at the time of permit issuance.

Comment: Since all point source discharges will be issued a "properly calculated" mixing zone and the application of the antidegradation policy is relevant to the issuance of the permit, not the compliance of the point sources with permit limits, as highlighted in the rule language, not a single point source discharge will be deemed under the Department's rules to be a reduction in water quality. . . There is nothing in the federal antidegradation regulations that suggests antidegradation protections do not apply within mixing zones. Recent EPA action strongly suggests otherwise (67 FR 68971, Nov. 14, 2002 and 1998 EPA disapproval of Kansas's water quality standards because the State's mixing zone rule provided for them in ONRW waters, "allowing a permanent lowering of water quality in at least a portion of such waters.....not consistent with Federal [antidegradation] regulations"). The Department's proposal would make only the most catastrophically polluting activities subject to the antidegradation regulation. While it is clear that the Department's intent in this proposed rule is to, with the sweep of a pen, eliminate all antidegradation reviews for point source permits, it is unclear what the ramifications are, if any, to its finding that a source out of compliance with its effluent limits is then considered to be reducing water quality. This does not conform to EPA's regulations that require that, "the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control" (40 C.F.R. § 131.12(a)(2)).

EPA Response: This provision does not remove antidegradation review for a discharger discharging into a previously established mixing zone; rather, it simply makes clear that an antidegradation review does not apply separately to the quality of water within the mixing zone so long as three conditions are met: if the discharge fails to comply with its limits; if there are overlapping mixing zones; or if the mixing zone is found not to be in accordance with OAR 340-041-0053. Under this provision, then the water quality within the mixing zone would be considered in conjunction with the High Quality Water (or Tier 2) antidegradation review of the impact of the discharge on the waterbody or segment as a whole. In this case, the "lowering" that triggers a Tier 2 review is whether the quality of water is lowered outside of the previously calculated mixing zone. Thus, if there is assimilative capacity for a pollutant in the waterbody and the new or expanded discharge will reduce that assimilative capacity, it will undergo an antidegradation review that meets the federal High Quality Waters requirements specified in 40 CFR § 131.12(a)(2).

This permissible approach for High Quality Waters is not inconsistent with previous EPA statements saying that there should not be permanent lowering of water quality in an Outstanding National Resource Water (ONRW). As noted above, an approach that considers the lowering of water quality outside of the mixing zone as the trigger for when an antidegradation review is wholly within the requirements of the federal regulation. Further, Oregon's antidegradation procedures for its Outstanding Resource Waters (OAR 340-041-0004(7)) provide for full protection of waters identified as Outstanding Resource Waters and is consistent with the federal requirements at 40 CFR § 131.12(a)(3) that ONRWs be maintained and protected.

The commenter questions how the State would apply its antidegradation requirements following a finding that a discharger is out of compliance with its effluent limits (this being one of the situations where the exemption of an antidegradation review for existing mixing zones would not apply). The commenter further asserts that this State provision does not conform to the federal requirement at 40 CFR § 131.12(a)(2) requiring that, before a state allows a point source to lower water quality in a Tier 2 water, the State must assure, inter alia, that "the highest statutory and regulatory requirements [are achieved] for all new and existing point sources." As noted above, Oregon's exemption of the water quality within a mixing zone from an antidegradation review does not exempt a discharger from any other applicable antidegradation review. Not requiring an antidegradation review of the water quality within an authorized mixing zone is in no way inconsistent with the regulatory requirement in 40 CFR § 131.12(a)(2). Oregon's rule and EPA's approval is consistent with the Tenth Circuit's decision in *American Wildlands v. Browner*, 260 F.3d 1192 (10th Cir. 2001).

Comment: The Oregon Rule fails to protect designated uses. Since EPA's proposed antidegradation implementation methods for Tier 1 are non-existent, one cannot count on the antidegradation component of the standards to protect existing uses.

EPA Response: Oregon used all data available to establish designated uses, including any data suggesting that since 1975, the waters would have supported more stringent use designations. EPA does not have in its record, nor has any person provided EPA with specific information concerning any particular waterbody in Oregon where the existing use of that waterbody (as demonstrated by data or information that the quality of water since November 1975 has been that which would support a particular use) is not protected by the time and place use designations in Oregon's rule.

Regarding implementation of Tier 1 of antidegradation, EPA's regulation at 40 C.F.R. § 131.12 does not specify minimum elements that are required to implement Tier 1. The regulation also does not require states to include implementation in their regulation, but rather to "identify" the methods used for implementation. Thus, states have broad discretion as to how much implementation language they choose to include in their standards. EPA reviews this implementation to see whether it undercuts the principle that existing uses are protected. There is nothing in Oregon's rule or Directive that undercuts existing use protection. If the public has data and information suggesting that there is an existing use that is not reflected in Oregon's use designations, that data may be submitted to the State and the State is required to consider that data under 40 C.F.R. § 131.10(i). Further, Oregon regulations protect "existing beneficial uses" and the Oregon Directive at page 25 explicitly provides that in authorizing any lowering of water quality, existing uses must be protected. This is sufficient to meet the requirements of 40 C.F.R. § 131.12(a)(1).

Comment: The exemption for water conservation activities from antidegradation review is contrary to law. A state regulation cannot simply define an increase in concentrations as not being subject to the antidegradation policy. The fact that there may not be an overall increase in the total mass load of the pollutant on at least an annual basis is irrelevant. An increase in concentrations, regardless of annualized loading issues, is a contribution to violations of water quality standards where a waterbody is impaired. Under Tier I of the antidegradation policy, such an increase is prohibited as causing impairment of existing uses or the water quality to support them, yet the Department's proposed rule would eliminate protection of existing uses from degradation caused by an increase in concentrations. The only significant limitation related to beneficial uses of this exclusion from antidegradation review is that pertaining to Department staff determining whether the proposed concentration increase would cause an "adverse effect on beneficial uses." There is no guidance to the staff in making this determination, there is no

explanation of why an increase in concentration is not a *de facto* finding of adverse effect (particularly since there is no exclusion in this provision for increases in effluent concentrations discharged to water quality limited streams), there is no explanation of how Tier I antidegradation provisions will be assured, there is no explanation about why this finding cannot logically be conducted within the context of the very antidegradation review the provision seeks to avoid. It merely grants complete discretion to the staff to make this determination. Moreover, such an increase in concentrations would constitute a violation of statutory and regulatory provisions prohibiting the causing or contributing to violations of water quality standards.

EPA Response: The provision does not eliminate the requirement in OAR 340-041-0004 to protect existing uses; it eliminates the requirement to conduct an antidegradation review otherwise applicable to increased discharges where the increase in pollutant concentration is a result of a water conservation activity, the total mass load of the pollutant is not increased, and the concentration increase has no adverse effect on the beneficial uses or listed species in the water body. Examples of water conservation activities include converting once-through cooling water systems used in a variety of industrial applications into closed loop recycle processes, or reducing water usage in industries such as mining or steel manufacturing by recycling or by increasing water efficiency in operations or processes where water is used.

With respect to high quality waters, Tier 2 does not bar lowering water quality where there is assimilative capacity in a particular water. Tier 2 seeks to provide for a public process and an analysis that the "lowering" is necessary to accommodate important social and economic concerns in the area of the lowering. Here, EPA defers to the state's judgment that water conservation activities are so important, that where they are properly implemented they would always meet the test of being necessary to accommodate important economic and social development in the area where the waters are located. Further, another independent reason EPA is approving this provision is because discharges authorized under this provision with the cap on load will not constitute a lowering of water quality in the waterbody. Most dischargers constitute a relatively small percentage of the receiving water flow, and given the limitation on total mass load of the pollutant, along with the assurance that criteria will be met, a temporary increase over prior discharges will not have the effect of lowering water quality sufficiently to trigger the need for Tier 2 review. Further, for water conservation activities, the State has already undertaken a process to determine that these activities are "necessary to accommodate important social and economic development." Therefore, where water conservation activities are at issue, for which public process has already occurred, EPA believes that it is not necessary for a state to require yet another procedural requirement, which essentially duplicates other environmental reviews (See CWA § 101(f)).

Comment: The *de minimis* heat increment that is not subject to antidegradation review is contrary to law. For example, if a 0.3 ºC increase is granted to a source to discharge into a waterbody at any temperature that is over optimum, that is a reduction in water quality. Instead, there should be no increases allowed in cold waters because it violates the policy of keeping cold waters cold, there should be no increases allowed into impaired waters because it violates the policy of restoring those waters to conditions usable by cold-water species, and there should be no increases allowed to cold water refugia because they are critical to salmon survival and recovery in both waters that are impaired and waters that are meeting the admittedly unprotective criteria of 18 ºC and 20 ºC.

There is nothing in the antidegradation provisions or elsewhere in the rule that prohibits incremental warming that would move a water from compliance with criteria to exceedance of criteria. There is no mechanism to track the *de minimis* increment, including the background

conditions and the sources, there is nothing in the antidegradation provisions that appears to apply to point or nonpoint sources of temperature loads, and there is no restriction on anthropogenic increases to streams that are currently impaired, those that are colder than applicable criteria, or those that are close to exceeding criteria.

EPA Response: EPA approves treating a 0.3 ºC increment as *de minimis* and therefore not a lowering of water quality for the same reasons it is approving the human use allowance (see Section 2.8 (Human Use Allowance) of this document). Because the human use allowance is defined as a 0.3 ºC over specified criteria, there is an ultimate limit for this exemption. With respect to provisions related to nonpoint sources, EPA does not have statutory authority to require nonpoint sources to be subject to antidegradation review (*American Wildlands v. Browner*, 94 F.Supp.2d 1150, 1164-65 (D. Colo. 2002), *aff'd* 260 F.3d 1192 (10th Cir. 2001)).

Comment: Oregon's exemption for recurring activities is contrary to law. The inclusion of this language is curious considering the fact that nowhere in the proposed rules does the Department include provisions to apply the antidegradation policy to nonpoint sources and flow reductions. Not only is the absence of such provisions inconsistent with the CWA and therefore establishes that these standards do not conform to the statute, but their explicit exclusion confirms it. Timber harvests are either recurring or new activities, but they cannot be considered neither of those. Webster's dictionary defines "recur" to mean something that "occur[s] again after an interval." Clearly, the harvesting of timber is an activity that occurs again after an interval or it occurs for the first time and is therefore "new." Again, the Department's clear intent is to create rules that eliminate the applicability of the statute and federal implementing rules to these major sources of nonpoint source pollution. In contrast, EPA's regulations require that, "the State shall assure that there shall be achieved . . . all cost effective and reasonable best management practices for nonpoint source control" (40 C.F.R. § 131.12(a)(2)). The language is clear: it includes "all" nonpoint sources, leaving no room for the Department to create rules that exclude the vast majority of the State's nonpoint sources. In addition, the Department concludes that if one of these nonpoint source activities is not "new or increased" then the antidegradation policy does not apply. Contrast this again with the language of the federal regulation which requires "all cost-effective and reasonable best management practices for nonpoint source control." *Id.* This federal regulation is not restricted to new or increased nonpoint sources, but applies to all nonpoint sources. So long as Oregon has regulatory programs for nonpoint sources, those programs are subject to the antidegradation policy and must be included in the Department's antidegradation implementation plan. Not only do the proposed rules fail to include such implementation, but the proposed language is intended simply to exclude these activities altogether from such implementation. This proposed exemption does not constitute compliance with the federal regulations and is inconsistent with federal antidegradation policy.

EPA Response: The provision in the antidegradation policy relating to nonpoint sources does not have the meaning suggested by the commenter. EPA's antidegradation regulation simply requires that states that regulate nonpoint sources ensure that existing nonpoint source controls are properly implemented before authorizing a lowering of water quality from point source discharges on a Tier 2 water. In other words, EPA's regulations require that before the state may authorize a point source to lower water quality in a Tier 2 water, the state must determine that existing best management practices (BMPs) for nonpoint sources are being achieved. Thus, the requirement in the last sentence of 40 C.F.R. § 131.12(a)(2) that BMPs be achieved cannot be triggered by the addition of pollutants from nonpoint sources and this part of EPA's antidegradation regulation does not impose a requirement for antidegradation review of the nonpoint sources themselves. Thus, 40 C.F.R. § 131.12(a)(2) does not require states to adopt nonpoint source controls and does not require nonpoint sources to undergo antidegradation review. Instead, 40 C.F.R. § 131.12(a)(2) requires that a state's pre-existing nonpoint source

controls be properly implemented before degradation caused by point sources on Tier 2 waters can occur. *Ovec v. Whitman*, 279 F.Supp.2d 732, 769 (S.D. West Va. 2004)("Thus, States are not required to regulate nonpoint source control, but if a State does not assure that best management practices are achieved for nonpoint source control, the State cannot permit the lowering of water quality from point sources on any Tier 2 water, economic or social necessity notwithstanding"). EPA does not have legal authority over nonpoint sources and therefore is not required to review and cannot disapprove regulation of nonpoint sources (*American Wildlands v. Browner*, 94 F.Supp.2d 1150, 1164-65 (D. Colo. 2002), *aff'd* 260 F.3d 1192 (10th Cir. 2001)). Because EPA does not have authority over nonpoint sources, EPA cannot compel a state to subject nonpoint sources to antidegradation review, even if the state has established other regulatory controls over nonpoint sources.

To the extent that this provision relates to regulated discharges, dischargers that have already been authorized do not constitute a lowering and thus are not required to undergo Tier 2 review.

Comment: NWEA supports restoration, however there are aspects of this proposed rule that are simply too open-ended and fail to assure that beneficial uses will be protected both in the short- and long-term.

. . this provision (OAR 340-041-0004(5)(a)) functions as an exemption from all the water quality standards. . . . there is nothing that provides for how the reasonable measures that are consistent with the restoration objectives will be determined. The rule leaves this entirely up to the discretion of the Department staff, despite the wholesale exemption the provision represents. Worse, there is no process that allows for any form of public or agency review of this discretion because the rule does not state where these measures will be established, whether there will be an enforcement mechanism if they are not used or compliance is lax, or what the basis of choosing one method over another will be. For example, this proposed rule language does not establish how the Department will decide between one or another method of control of invasive species; the result is likely to be the cheapest – herbicides – every time because as a water quality standard, this provision suggests nothing but Department discretion to allow any action without any oversight whatsoever. There is nothing that advises the public or agencies now, or at the time the provision is used, as to how the Department will make a determination that there is a "net ecological benefit to the restoration activity."

EPA Response: EPA finds that this provision is consistent with 40 C.F.R. § 131.12(a)(2) because it is reasonable to consider short term events as not being a "lowering" of water quality subject to Tier 2 review. Although no lowering of water quality is permitted in an ONRW, EPA has stated in the WQS Handbook, that short term lowering of quality in an ONRW may be allowed (p. 4-10). EPA further states in the Handbook (p. 4-10) that "Such activities must not permanently degrade water quality or result in water quality lower than that necessary to protect the existing uses in the ONRW. It is difficult to give an exact definition of 'temporary' and 'short-term' because of the variety of activities that might be considered. However, in rather broad terms, EPA's view of temporary is weeks and months, not years." The public does have an opportunity to comment on and challenge any NPDES permit invoking this provision.

With respect to restoration activities, activities to control an invasive species, or an emergency situation, EPA also notes that the decision that the activity is necessary to accommodate important social or economic concerns would most likely be made in the affirmative and thus requiring an antidegradation review in addition to the public review that occurred to support the activity would be duplicative of the prior process. In emergency situations, there simply may not be sufficient time for the State to undergo a Tier 2 review.

Comment: Oregon's definition of ONRW is too narrow. The screening process is ineffective. Implementation methods for Tier 3 waters is insufficient.

EPA Response: EPA views these provisions as unchanged except for the addition of State Parks, State Wildlife Refuges and federally designated wilderness areas. Thus, the Agency is not taking actions on any aspect of the unchanged policy except for these additions.

EPA's regulations provide a great deal of discretion to states and authorized tribes regarding the amount of specificity required in antidegradation implementation methods. The regulations do not specify minimum elements for such methods, but do require that such methods are consistent with the intent of the antidegradation policy (68 FR 58775). Oregon defines "Outstanding Resource Waters" as "those waters designated by the Environmental Quality Commission where existing high quality waters constitute an outstanding State or national resource based on their extraordinary water quality or ecological values, or where special water quality protection is needed to maintain critical habitat areas" (OAR 340-041-0006(42)). Oregon added State Wildlife Refuges and federally designated wilderness areas to the list of priority water bodies for nomination. This definition is consistent with the requirement of 40 C.F.R. § 131.12(a)(3) because it incorporates waters of exceptional ecological or recreational significance. EPA notes that the protections afforded such waters are consistent with EPA's interpretation of its regulations in that they do allow for a short term lowering of water quality in such waters. WQS Handbook at 4-10; 63 FR 36786. Finally, EPA notes that it has interpreted its regulation at 40 C.F.R. § 131.12(a)(3) to provide discretion to states as to whether to designate a particular waterbody as an ONRW and in the process under which that designation occurs (63 FR 36786).

Antidegradation Implementation Methods

Comment: The Department's response to the ruling in *Northwest Environmental Advocates v. EPA*, has been to create a set of exemptions and exclusions related to the antidegradation policy in order to show what will not constitute a "reduction in water quality" and allowing for short term degradation. Simply put, this does not constitute an antidegradation implementation plan. It is clear that Oregon has no intention of developing such a plan.

We will note that one critical aspect of antidegradation implementation that is absent from the Department's rules concerns Tier I. Tier I protections will not come into play without an affirmative set of provisions. For example, all NPDES permittees and applicants for 401 certifications should be required to submit a plan to the Department to identify existing uses present in the receiving streams for their discharges. This includes amphibians, fish, data necessary to create and to compare to biocriteria, baseline water quality conditions, flow, etc. Likewise, the Department should have Tier I implementation procedures for regulatory nonpoint source programs, such as forest practices and agricultural practices.

It should also have rules that establish the procedures to identify and evaluate protection for existing uses in the development of TMDLs. Protection of existing uses includes application of the Department's many narrative provisions, such as the narrative criterion on toxics that precludes harm from multiple toxics. The Tier I implementation procedures should include methods on how DEQ will implement such provisions.

EPA Response: EPA's regulations provide a great deal of discretion to states and authorized tribes regarding the amount of specificity required in antidegradation implementation methods. The regulations do not specify minimum elements for such methods, but do require that such methods are consistent with the intent of the antidegradation policy (68 FR 58775; 63 FR 3678) (considering whether to add minimum requirements to the regulation for implementation

policies). Oregon's antidegradation policy and implementation methods meet the requirements of EPA's antidegradation regulation. In addition, the CWA only requires that antidegradation be applied to point sources because the CWA only gives EPA authority to regulate point sources. Thus, whether antidegradation applies to nonpoint sources is solely a question of State and tribal law (68 FR 58775-58776). Therefore, EPA's approval of Oregon's antidegradation implementation procedures only applies to point sources. Plaintiffs in the mandatory duty suit and commenters on Oregon's rule clearly believe that more is required of a state's antidegradation policy, but EPA's rules simply do not require that level of detail.

2.3 STATEWIDE NARRATIVE CRITERIA -NATURAL CONDITIONS [OAR 340-041-0007(2)]

Action: EPA approves of Oregon's natural conditions provision because it is consistent with the Clean Water Act and its implementing regulations.

1. Natural condition is protective because the designated uses were protected in the natural condition.

EPA has determined it is appropriate for state or tribal water quality standards to include narrative natural conditions criteria for parameters that naturally occur in the environment, such as iron, zinc, selenium, copper, phosphorus, dissolved oxygen, and suspended sediments. These pollutants may occur in amounts that are higher (or lower for dissolved oxygen) than the more generally applicable numeric criteria. EPA has determined that it is appropriate, under certain circumstances, for water quality criteria to reflect the natural condition of a waterbody, as an alternative to the generally applicable numeric criteria. The essential rationale for this is that the beneficial uses that Oregon's rule establishes were supported by the water in its natural condition, prior to any human effects on water quality.[3] Oregon's regulations at OAR 340-041-002(34) and (35) define natural conditions as conditions not influenced by past or present anthropogenic (human) impacts. For example, historical records (EPA 2001a) show that salmonid uses thrived prior to human influence and that natural stream conditions were not inconsistent with salmonid uses. Where a numeric criterion is more stringent than the natural condition and the numeric criterion is more stringent than necessary to protect the use; applying a narrative criterion based on natural condition is an appropriate level of protection for the use.

Several EPA documents have addressed the establishment of water quality criteria based on naturally occurring conditions. A 1997 EPA policy memorandum on natural background from Tudor Davies, Director of the Office of Science and Technology, provided some guidance for states and tribes wishing to establish site specific aquatic life criteria for pollutants at levels equal to natural background concentrations. (See *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background*, November 5, 1997.[4]) EPA also addressed water quality criteria based on natural background conditions in EPA's Advance Notice of Proposed Rule Making (ANPRM) for the Water Quality Standards program. (See 63 FR 36742, 36761 (July 7, 1998),

[3]If for some reason a use is designated that did not exist naturally and that is not supported by the natural condition, then the use could be removed if the requirements of 40 C.F.R. § 131.10(g) are satisfied.

[4]Available at http://www.epa.gov/waterscience/library/wqcriteria/naturalback.pdf

Section III.B.4.d.iii.[5]) The ANPRM discusses considerations regarding site-specific criteria for aquatic life protection that are based on natural conditions, and explains EPA's 1997 memorandum. Although those documents pertained specifically to using a site-specific criteria provision as a means of establishing natural background criteria, they set forth several policy considerations that are relevant to establishing water quality criteria based on natural background.

2. Narratives are permitted by EPA's regulations at 40 C.F.R. §§ 131.3(b) and 131.11(b)(2).

In OAR 340-041-0007(2), Oregon has chosen to provide for alternative criteria to apply based on the natural conditions not through site-specific criteria, but rather through a narrative criterion that allows criteria based on the natural condition derived in a scientifically defensible manner to supersede the otherwise applicable numeric criterion. Under EPA's regulations criteria are expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use. 40 C.F.R. § 131.3(b). Further, states may establish, under 40 C.F.R. § 131.11(b)(2), narrative criteria "to supplement numerical criteria." EPA has determined it is appropriate to use narrative criteria in this manner in order to provide flexibility where naturally occurring water quality is protective of the designated use.

3. The State regulation represents a scientifically defensible approach to identifying criteria that represent the natural condition.

In order to assert that a State's natural condition criteria fully supports the uses, EPA evaluates whether the criteria truly reflect conditions absent human impacts and whether the criteria do not allow concentrations of naturally occurring parameters that are also present from past human activities to be considered as part of the natural condition. This is one of the policy considerations identified in the 1997 EPA policy memorandum for criteria based on natural conditions. The narrative criterion that Oregon has adopted for natural conditions, OAR 340-041-0007(2), and the associated definitions, OAR 340-041-0002(34), meet this test. The narrative criterion provides that the "natural condition" may supersede a numeric criterion that would otherwise apply. The proposed regulation defines "natural condition" to entirely exclude all "past or present anthropogenic activities," and explicitly lists certain examples of disturbances that would be considered natural (OAR 340-041-0002(34)). EPA has determined that this definition sufficiently excludes human effects from the "natural condition" that supersedes the numeric criterion.

4. In addition, Oregon's articulationof the methods for implementation support EPA's decision that Oregon's natural conditions provisions ensure that natural conditions criteria will be derived in a scientifically defensible manner.

As discussed in the ANPRM, the 1997 EPA policy memorandum, and the Temperature Guidance, EPA recommends that when estimating natural conditions under state water quality standards, the best available scientific information and techniques should be utilized. Oregon has described the methods it will use to determine natural condition for temperature and other parameters in its letters to EPA from Mike Lllewellyn dated December 19, 2003 and February 4, 2004. EPA views the methods identified by Oregon as the best available scientific methods (EPA Temperature Guidance).

[5]Available at http://www.epa.gov/fedrgstr/EPA-WATER/1998/July/Day-07/w17513.htm

5. EPA notes that the process will allow for public and EPA oversight.

Both the ANPRM and the 1997 EPA policy memorandum suggest that states or tribes provide an opportunity for public notice and comment on natural background determinations. Those documents contemplated the use of natural background determinations in site-specific criteria, which would involve a state revision of its applicable standards and be subject to EPA review and approval. Implementation of OAR 340-041-0007(2) in some instances would involve adoption of site-specific criteria. In addition, implementation may occur in contexts that would not involve adoption of revised criteria, such as identification of natural condition through a listing of impaired waterbodies or development of TMDLs under CWA § 303(d), or in issuance of NPDES permits under CWA § 402. Each of these contexts require state public process and EPA oversight.

Under the CWA, EPA is required to approve or disapprove Oregon's TMDLs and 303(d) listing of impaired waters. If a natural condition determination is inconsistent with Oregon's narrative natural condition criterion, EPA would have the authority to disapprove the TMDL or 303(d) listing decision based on its inconsistency with Oregon's WQS. In addition, natural background determinations in TMDLs and 303(d) lists would be subject to public notice and comment through the requirements that apply generally to those two types of actions (40 CFR 130.7(c)(1)(ii) and 130.7 (d)(2)).

Under the CWA, EPA has oversight authority of state-issued NPDES permits and EPA has the authority to object and issue a permit if the state permit does not meet all applicable criteria, including appropriate application of the natural conditions criterion. In addition, the public is entitled to notice and an opportunity for comment on any state-issued NPDES permit, which would ensure public review of a natural conditions determination that is made in that context. NPDES permits are subject to judicial review under state procedures for state-issued permits (40 C.F.R. § 123.30) or, following an administrative challenge to EPA under 40 C.F.R. § 124.19, judicial review in federal court under CWA § 509(b), 33 U.S.C. § 1369(b).

6. EPA recognizes additional public notice commitments made by Oregon.

In addition to the required public participation processes required by regulations applicable to establishment of TMDLs, 303(d) lists, and issuance of NPDES permits, Oregon has committed in its letter to EPA from Mike Lllewellyn dated February 4, 2004, to list the water bodies where "natural conditions" findings have been made on the DEQ web page to ensure that the public is notified of actions where Oregon has applied the natural conditions provisions.

Responses to Significant Comments:

Comment: These events listed in the natural condition definition (OAR 340-041-0002(34)) are not all "natural"–some of them are caused by, or worsened by, anthropogenic sources.

EPA Response: EPA interprets Oregon DEQ's definition of natural conditions as intending to incorporate events that are truly natural into the natural conditions criteria. The second sentence of the provision is meant to provide examples of naturally occurring events. While some of these events may be exacerbated by anthropogenic sources, they also may be, and are most likely to be, truly naturally occurring events. The extent to which human influences on these types of naturally occurring events may affect water quality may not in a particular circumstance be known. The alternative to not allowing the natural conditions definition to include events that are naturally occurring because of a possible influence by anthropogenic activities on the events that could lead to an eventual effect on water quality is to not allow a natural condition criterion

at all. EPA does not believe that is reasonable because naturally occurring water quality is and can be protective of a designated use. Thus, EPA has made the decision that it is appropriate for states and tribes to include narrative natural condition criteria for parameters that naturally occur in the environment.

Comment: DEQ intends to adopt less stringent criteria without Federal oversight. A process for determining natural conditions should be established up front in the rule language.

EPA Response: Natural conditions criteria are analogous to narrative criteria which are interpreted and implemented in the context of water quality assessment, TMDL establishment, and NPDES permit issuance. EPA regulations do not require states to provide an implementation methods in their standards, although EPA considers methods to determine whether they will undercut the intent of the standards (48 FR 51400, 51411 (November 8, 1983)). However, Oregon has described the methods it will use to determine natural condition for temperature and other parameters in its letters to EPA from Mike Llewellyn dated December 19, 2003 and February 4, 2004. EPA has determined that Oregon's definition of "natural conditions" is reasonable and limits application to only those situations where the amount of the pollutant is demonstrated to be less stringent than the otherwise applicable numeric criteria due solely to non-anthropogenic reasons.

2.4 INTERGRAVEL DISSOLVED OXYGEN (IGDO) 8.0 mg/l [OAR 340-041-0016(1)(a)(C)]

Oregon revised their IGDO criterion as follows:

> **For water bodies identified as active spawning areas in the places and times indicated ..., The spatial median IGDO concentration must not fall below 8.0 mg/l**

The State has identified when and where salmonid and trout spawning occurs throughout the State and has provided the information in the tables and figures set out in OAR 340-041-0101 to 340-041-0340. The purpose of the IGDO criterion is to protect salmonid spawning and egg incubation to fry emergence from low dissolved oxygen concentrations.

Action: EPA approves Oregon's revised criterion for IGDO and because it has determined that the provision meets the requirements of Section 303(c)(2)(A) and 40 CFR 131.6 and 131.11 and is consistent with EPA's recommended criterion for IGDO as detailed in EPA Quality Criteria for Water, 1986. This determination is based on a review of the literature regarding IGDO and salmonid spawning. An 8 mg/L IGDO criterion, applied as a spatial median, is protective of early life stages of salmonids because available data show that 8 mg/L, as a mean, is above levels[6] that reduce embryo survival, cause delayed emergence, reduce growth in alevins, increase susceptibility to disease, and cause increased uptake of toxics. As a point of comparison, most studies of the effects of differing levels of IGDO report results as measurements of the mean (as opposed to instantaneous measurements of concentrations). Oregon had previously defined a spatial median as the "value which falls in the middle of a data set of multiple IGDO measurements taken within a spawning area." A median value as a criterion indicates that half the sampling measurements taken should be above (and half below) the criterion (or spatial median). Median values are useful statistical tools because they are not overly influenced by a

[6] With this parameter, intergravel dissolved oxygen (IGDO), a higher level is less toxic than a lower level.

few extreme values, but actually reflect the middle of a frequency distribution.

A general review of toxicity studies from both the laboratory and field shows that mean IGDO levels below 6-8 mg/L may adversely affect early life stages of salmonids. Many variables affect IGDO concentrations, including temperature, water velocity, and amount of fine sediments. Salmonid DO requirements increase with increasing temperatures, reduced stream velocities, and increased fine sediments (ODEQ 1995). At 15 °C (59 °F), mean IGDO requirements for steelhead between egg fertilization and hatching have exceeded 10 mg/L (Rombough 1986, Carlson 1980). In this action, EPA is approving temperature criteria of 13°C for salmon and steelhead spawning and 12°C for bull trout spawning. ODEQ (1995) observed that embryo survival in field studies is negligible when IGDO falls below 5 mg/L. Maret et al. (1993) estimated negligible embryo survival associated with mean IGDO concentrations below 8.0 mg/L from a field study conducted to determine correlations between percent fine sediment, oxygen saturation, and IGDO concentrations.

Several studies have documented that low IGDO concentrations appear to reduce the likelihood of survival to emergence or post-emergent survival for embryos (ODEQ 1995). ODEQ (1995) observed that alevin size was positively correlated with IGDO concentrations. Maret et al. (1993) reported reduced growth (length) in brown trout alevins at moderate mean IGDO concentrations of 6 to 7 mg/L, as compared with that of alevins incubated at mean IGDO concentrations of 9 to 10 mg/L. ODEQ (1995) found that alevins raised at low DO concentrations were smaller; however, the fish eventually reached nearly the same weight as fish incubated at higher DO concentrations. ODEQ (1995) similarly reported compensatory growth in chinook salmon and steelhead trout after about 2 months. The ability of fry to survive in their natural environment may be related to the size of fry at hatch (ODEQ 1995). Results from several researchers (ODEQ 1995; Chapman and McLeod 1987) studying coho salmon demonstrate that late-emerging alevins and small-sized fry are poor competitors and face almost certain death from predation, disease, starvation, or a combination of these.

IGDO concentrations, water column velocities, and especially the intergravel flow rate, are often interrelated variables that affect the survival of incubating embryos (ODEQ 1995). Sowden and Power (1985), from fieldwork with rainbow trout embryos, reported 50 percent embryo survival with a mean IGDO concentration of 8 mg/L and seepage velocities exceeding 100 cm/hr. These authors also reported that survival was negligible at intergravel water velocities below 20 cm/hr.

In field testing of brown trout spawning habitat impacted by nonpoint source pollution (agricultural pollutants) in Idaho, Maret et al. (1993) found a significant relationship between IGDO and survival. Percent survival was estimated to be less than 10 percent when mean IGDO fell below 8.0 mg/L. Maret et al. (1993) suggest that growth and survival were positively correlated to mean IGDO concentrations above 8.0 mg/L when seepage velocities exceeded 100 cm/hr.

Results of field studies in Oregon were similar to those reported by Maret et al. (1993) in Idaho. Survival was negligible for juvenile salmonids when IGDO concentrations fell below 6 mg/L, especially at relatively low intergravel velocities (ODEQ 1995). Hollender (1981), studying wild brook trout, observed that survival of embryos in natural redds (the depressions in which salmon deposit their eggs) exposed to IGDO concentrations usually above 6.0 mg/L were positively correlated with the mean IGDO concentration up to 8.0 to 9.0 mg/L. Hollender (1981) observed a overall mean IGDO level in the natural redds of 8.2 mg/L, with a range of means between 3.7 and 11.6 mg/L with only about 25 percent of the redds with mean DO concentrations below 6 mg/L. Artificial redds used in the this study produced much lower survival, but also indicated negligible survival below a mean of about 8.0 mg/L. Phillips and

Campbell (1962) studied steelhead in streambed gravels and recovered few or no sac fry from containers placed where mean oxygen concentrations were below 8 mg/L. ODEQ (1995), studying juvenile trout, found approximately 35 percent survival at mean IGDO concentrations of 6 mg/L and approximately 95 percent survival when the mean IGDO concentration was 8 mg/L. Results from ODEQ (1995) suggest that mean IGDO concentrations less than 5 mg/L are lethal.

ODEQ (1995) reports that low DO concentrations increase the acute toxicity of various toxicants such as metals (e.g., zinc) and ammonia. ODEQ (1995) reports that rainbow trout eggs excrete most of their nitrogenous wastes as ammonia, which is also a common pollutant. The toxicities of environmental pollutants may be compounded by low DO concentrations. Eggs in redds exposed to ammonia under conditions of low IGDO concentration and low water velocity may experience ammonia toxicity due to insufficient oxygen to nitrify ammonia. In addition, under these conditions, ammonia nitrification can act to further reduce already low IGDO concentrations.

The scientific literature reviewed above suggests that adverse effects increase markedly at mean IGDO concentrations less than 8 mg/L. Most of these studies have examined the effect of IGDO concentrations under controlled conditions that allow minor variations in concentration. These conditions facilitate the interpretation of the study results; however, they do not mimic the natural environment where IGDO varies within a redd or across a waterbody. Oregon has promulgated an IGDO criterion, from spawning until fry emergence from the gravels, that states that the spatial median IGDO concentration should not fall below 8.0 mg/L. As stated previously, by definition (OAR 340-041-002, No. 53), this means that half of the measurements of IGDO within a spawning area would have values less that 8.0 mg/L, and half would have values greater than 8.0 mg/L. Therefore, some developing embryos will be exposed to concentrations less than an absolute minimum of 8.0 mg/L (as they also were in studies reporting mean concentrations of 8 mg/L that protected embryo development and survival). However, IGDO values vary not only across a stream, but also within an individual redd. Using a spatial median to implement this criterion makes sense, as it assures that when measured across any given spawning area, the distribution of IGDO concentrations will be centered around 8.0 mg/L, a value demonstrated to protect fertilization, embryo development, and survival. This indicates that enough of the redd will have IGDO values sufficient to provide for spawning and egg incubation to fry emergence. Therefore, EPA has determined that Oregon's 8.0 mg/L IGDO criterion will protect designated uses for spawning and egg incubation to fry emergence.

Responses to Significant Comments:

Comment: Concern was expressed that the State did not provide a definition of "active spawning areas."

EPA Response: The State has designated that the IGDO criterion applies to the spawning areas designated in the tables and maps at OAR 340-041-0101 to 340-041-0340. Those areas were designated through a process that identified spawning areas based on known fish use information about documented observations, as well as the best professional judgment of local field biologists as to where use is likely to occur based on suitable habitat (i.e., waters near areas of documented life stage presence on the same waterbody that have similar habitat features, such as flow volume, gradient, gravel size, and pool frequency, and no known obstructions or reasons why the use would not also be present in these waters). The database used was developed by ODFW and reflected information collected over the past five life cycles for a particular species, which ranges from 15 to 35 years. Therefore, the areas identified where the IGDO criterion would apply are broader than just where spawning is currently observed to occur. See the

discussion in Section 2.13 (Oregon's Salmonid Use Designations) of this document.

Comment: A question was raised to why the Dissolved Oxygen (DO) in the water column only has to meet 9 mg/L (vs. 11 mg/L) when the IGDO is 8mg/L.

EPA Response: EPA took action on Oregon's dissolved oxygen criterion in 1999, approving the criterion as protective of salmonid uses. EPA is not acting on Oregon's dissolved oxygen criterion at this time because it is not a new or revised water quality standard. However, it is important to note that the IGDO criterion applies independently of the previously adopted dissolved oxygen criterion.

Comment: Concern was expressed about the barometric pressure exception to the IGDO criterion.

EPAResponse: EPA is not taking action on this provision, as it was part of the approval action taken in 1999 and the provision is not new or revised.

Comment: Concern was expressed over whether the spatial median of 8 mg/L IGDO criterion was only going to be used as a trigger for possible action by Oregon Department of Environmental Quality.

EPA Response: The comment refers to Oregon's previous IGDO criterion. The revised criterion that EPA is acting on does not contain that language. The spatial median of 8 mg/L is the criterion.

Comment: Concern was expressed over an exception to the cold-water aquatic-life DO criterion.

EPA Response: This criterion is not new or revised; therefore, EPA is not taking action on it at this time.

Response to Biological Opinion (BO) findings on IGDO

USFWS and NOAA Fisheries Biological Opinions (2004) disagreed with EPA's Biological Evaluation ("BE") (EPA, Feb. 2004) effects determination for Oregon's IGDO criterion. EPA determined that approval of the IGDO criterion (spatial median of 8 mg/L) would not adversely effect salmonids because it was within the protective range (8 mg/L - 12 mg/L) of IGDO thresholds for salmonids spawning through fry emergence, as cited in the scientific literature described above. Most of the data in the scientific literature is reported as mean values, as discussed above. NOAA Fisheries did not concur "due to the natural high variability in IGDO, stream reaches areas meeting the criterion will include localized areas of lower IGDO." USFWS concluded that the criterion, because it is measured as a "spatial median," would allow some developing embryos to be exposed to reduced IGDO concentrations below 8 mg/L, and some embryos may be adversely affected by this criterion. Although both Services found the threshold of 8 mg/L to be adequate to avoid jeopardizing the continued existence of threatened and endangered salmonids, they found that the metric, the spatial median, allowed the IGDO concentration to fall below 8 mg/L in some times and places and thus would cause some adverse effects to individuals in some places. Given the variability of IGDO in the natural environment and the fact that the studies used to determine the protection offered by the IGDO criterion measured IGDO as a mean, EPA has determined that the spatial median is an appropriate metric and that Oregon's criterion will protect the designated use.

IGDO concentrations are difficult to measure and assess. Available data indicate that the levels

of IGDO will vary widely, both spatially and temporally due to biological, chemical, and physical factors. This is because IGDO varies naturally throughout the day and is affected by weather, the photosynthesis of plant life within a waterbody, and other factors. Levels can vary within a single redd, as well as within spawning gravel in a stream. Levels vary naturally over the course of 24 hours, with IGDO levels decreasing overnight during respiration (the process or processes involved in the exchange of oxygen and carbon dioxide between an organism and the environment), and increasing during the day, during photosynthesis (the metabolic process in plants that produces oxygen from carbon dioxide, water, and sunlight).

Coble (1961), Turnpenny and Williams (1980) observed significant spatial variability of IGDO within individual gravel areas and between gravel areas. Using mean values for standpipe measures and lowest values for interstitial DO, the authors demonstrated increased survival with IGDO concentration above 4.9 mg/L

Additionally, NOAA Fisheries found that adverse effects may occur to some individuals due to the uncertainties surrounding the science. EPA does not disagree with the conclusion that there is uncertainty surrounding IGDO due to gaps in the scientific literature; however, EPA has determined that given the available science, as cited in the Biological Evaluation (EPA, Feb. 2004), 8 mg/L is an appropriate IGDO level to protect the designated uses. The findings of studies cited in the BE (and above), taken together, suggest that adverse effects may occur below mean IGDO levels of 8 mg/L and positive effects above mean IGDO levels of 8 mg/L. However, in order to determine that a waterbody meets the 8 mg/L spatial median criterion, enough of the the waterbody will have levels of IGDO above 8 mg/L and therefore, sufficient to protect the designated uses of spawning and egg incubation to fry emergence. Given that the studies used to determine the protective value of 8 mg/L IGDO measured IGDO as a mean value, it is reasonable to conclude that a spatial median value of 8.0 mg/L will protect the spawning use. The CWA calls for EPA and states to use the best available science when establishing criteria, which Oregon did here.

2.5 TEMPERATURE NUMERIC CRITERIA FOR OREGON'S SALMONID USE DESIGNATIONS [OAR 340-041-0028(4)]

Oregon's Metric - Maximum Seven-day Average of the Daily Maximum

Action: EPA approves the use of Oregon's metric, maximum seven-day average of the daily maximum (7DADM) as consistent with the CWA and its implementing regulations. Under the CWA and EPA's regulations at 40 C.F.R. §§ 131.3(b); 131.5(a)(2); 131.6(c), 131.11(a) criteria must be sufficient to protect the designated uses established by the State. Use of this metric is protective of the designated uses for the reasons discussed in the Temperature Guidance and in the preamble to EPA's proposed Oregon water quality standards.

This metric is oriented to daily maximum temperatures, so it can be used to protect against short term acute effects, such as lethality and migration blockage conditions. The 7DADM metric describes the maximum temperatures in a stream, but is not overly influenced by the maximum temperature of a single day. Thus, it reflects an average of maximum temperatures that fish are exposed to over a week-long period. Although the maximum temperature of a single day may be higher than the 7DADM value, temperature data indicate that it is unlikely to be more than 1°C. (See Temperature Guidance.) Because the criteria are oriented to protect for chronic sub-lethal effects and are well below temperatures that would cause short-term lethality, having a day or two with a daily maximum slightly higher than the 7DADM value would be biologically insignificant and would not undermine the protectiveness of the 7DADM criteria.

This metric can also be used (and is used) to protect against sub-lethal or chronic effects (e.g., temperature effects on growth, disease, smoltification, and competition), but the resultant cumulative thermal exposure fish experience over the course of a week or more needs to be considered when assessing a 7DADM value to protect against these effects. As discussed in the Temperature Guidance, many rivers and streams occupied by salmon and steelhead in the Pacific Northwest have a 3°C (5°F) difference between the 7DADM and the weekly mean temperature during the summer months. For some chronic effects, such as disease and competition, it may be appropriate to subtract 3°C from the 7DADM numeric criterion to assess these chronic effects in a typical stream. However, for juvenile growth, EPA has concluded that both maximum temperatures and mean temperatures affect juvenile growth. As discussed in the Temperature Guidance, the "mid-point" temperature between the mean and the maximum is the "equivalent" constant temperature for comparisons to juvenile growth studies done at constant temperatures. Thus, a river with a 7DADM value of 18°C (64°F) and a 15°C (58°F) weekly mean temperature will be roughly equivalent to a constant laboratory study temperature of 16.5°C (61.7°F) (mid-point between 15°C (58°F) and 18°C (65°F). Thus, both maximum and mean temperatures are important when determining a 7DADM value that is protective against reduced juvenile growth effects. See the Temperature Guidance (pp.19-20).

To compare a 7DADM numeric criterion to juvenile growth studies at constant temperatures, EPA believes it is appropriate to subtract 1.5°C (2.7°F) from the 7DADM value for a typical stream. For bull trout streams, where the difference between the 7DADM and the weekly mean is smaller because there is less diurnal variation, EPA believes it is appropriate to subtract 0.5°C/0.9°F from the 7DADM criterion to make comparisons to juvenile growth studies at constant temperatures in a typical stream. These calculations were made by EPA when it recommended protective criteria in its Temperature Guidance.

It is important to note that some studies analyzed sub-lethal effects based on maximum or 7DADM temperature values that do not need translation for purposes of determining protective 7DADM temperatures. For example, some field studies assess the probability of occurrence or density of a specific species based on maximum temperatures (Sauter et al. 2001; EPA 2003). These field studies represent an independent line of evidence for defining upper optimal temperature thresholds, which complements the laboratory studies considered. EPA used all lines of evidence when recommending protective criteria in its Temperature Guidance.

It is also important to recognize that confounding variables exist for which it is difficult to account. For instance, the amount of diurnal variation in rivers and streams in the Pacific Northwest varies considerably; therefore, the difference between the 7DADM and the weekly mean will vary. The difference between the 7DADM temperature and the weekly mean may be less than 1°C for rivers with little diurnal variation and as high as 9°C for streams with high diurnal variation (See Temperature Guidance). Another variable is food availability. The temperature at which optimal juvenile growth occurs depends on the food supply. Optimal growth temperatures under limited food supply are lower than those under unlimited/satiated food supply. Generally, EPA believes that laboratory studies under limited food availability most closely reflect environmental conditions fish typically experience. However, situations with abundant food do occur, with the result that optimal growth temperatures would be higher. Thus, a particular 7DADM numeric criterion will be more protective in situations with high diurnal variation and/or abundant food and will be less protective in situations with low diurnal variation and limited food. Although these uncertainties exist, they do not undermine the use of the 7DADM metric to protect designated uses.

Numeric Criteria for Temperature

Action: EPA approves the use of Oregon's temperature criteria as consistent with the CWA and its implementing regulations. Under the CWA and EPA's regulations at 40 C.F.R. §§ 131.3(b); 131.5(a)(2); 131.6(c), 131.11(a) criteria must be sufficient to protect the designated uses established by the State. Oregon's revised temperature criteria are the same as those EPA recommended in the Temperature Guidance and EPA's proposed water quality standards for Oregon. The scientific rationale and basis for EPA's determination that these temperature criteria are protective of the various life stages to which they correspond are described in the Temperature Guidance and the six supporting Technical Issue Papers.

Tables 1 and 2 provide summaries of the important water temperature considerations, which formed the scientific basis of EPA's recommended temperature criteria. The tables are taken from the Temperature Guidance.

Table 1. Summary of Temperature Considerations for Salmon and Trout Life Stages

Life Stage	Temperature Consideration	Temperature & Unit	Reference
Spawning and Egg Incubation	Temperature range at which spawning is most frequently observed in the field	4 - 14 °C (daily avg.)	Issue Paper 1,[1] pp. 17-18 Issue Paper 5,[2] p. 81
	Egg Incubation Studies	4 - 12 °C (constant)	
	- In good gravel	6 - 10 °C (constant)	
	- Optimal range		
	Reduced viability of gametes in holding adults	13 °C (constant)	Issue Paper 5, p. 16
Juvenile Rearing	Lethal temperature (1-week exposure)	23 - 26 °C (constant)	Issue Paper 5, pp. 12, 14 (Table 4), 17, and 83-84
	Optimal growth		
	- Unlimited food	13 - 20 °C (constant)	Issue Paper 5, pp. 3-6 (Table 1), and 38-56
	- Limited food	10 - 16 °C (constant)	
	Rearing preference temperature in lab and field studies	10 - 17 °C (constant) <18 °C (7DADM)	Issue Paper 1, p. 4 (Table 2) EPA 2003
	Impairment to smoltification	12 - 15 °C (constant)	Issue Paper 5, pp. 7 and 57-65
	Impairment to steelhead smoltification	>12 °C (constant)	Issue Paper 5, pp. 7 and 57-65
	Disease risk (lab studies)		
	- High	>18 - 20 °C (constant)	Issue Paper 4,[3] pp. 12-23
	- Elevated	14 - 17 °C (constant)	
	- Minimized	12 - 13 °C (constant)	
Adult Migration	Lethal temperature (1-week exposure)	21 - 22 °C (constant)	Issue Paper 5, pp. 17, 83-87
	Migration blockage and migration delay	21 - 22 °C (average)	Issue Paper 5, pp. 9, 10, 72-74 Issue Paper 1, pp. 15-16
	Disease risk (lab studies)		
	- High	>18 - 20 °C (constant)	Issue Paper 4, pp. 12 - 23
	- Elevated	14 - 17 °C (constant)	
	- Minimized	12 - 13 °C (constant)	
	Adult swimming performance	>20 °C (constant)	Issue Paper 5, pp. 8, 9, 13, 65 - 71
	- Reduced	15 - 19°C (constant)	
	- Optimal		
	Overall reduction in migration fitness due to cumulative stresses	>17 - 18 °C (prolonged exposure)	Issue Paper 5, p. 74

[1] Sauter, S.T., J. McMillan, and J. Dunham. 2001. *Issue paper 1: salmonid behavior and water temperature*. Prepared as part of EPA Region 10 Temperature Water Quality Criteria Guidance Development Project.

[2] McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. 2001. *Issue paper 5: summary of technical literature examining the physiological effects of temperature on salmonids.* EPA-910-D-01-005. U.S. Environmental Protection Agency. 114 pp.

[3] Materna, E. 2001. *Issue paper 4: temperature interaction.* EPA-910–D-01-004. Prepared as part of the U.S. Environmental Protection Agency's Region 10 Temperature Water Quality Criteria Guidance Development Project, Seattle, WA. 33 pp.

Table 2. Summary of Temperature Considerations for Bull Trout Life Stages

Life Stage	Temperature Consideration	Temperature & Unit	Reference
Spawning and Egg Incubation	Spawning initiation	<9 °C (constant)	Issue Paper 5,[1] pp. 88 - 91
	Temperature at which peak spawning occurs	<7 °C (constant)	Issue Paper 5, pp. 88 - 91
	Optimal temperature for egg incubation	2 - 6 °C (constant)	Issue Paper 5, pp. 88 - 91 Issue Paper 5, p. 16
	Substantially reduced egg survival and size	6 - 8 °C (constant)	Issue Paper 5, pp. 18, 88 - 91
Juvenile Rearing	Lethal temperature (1-week exposure)	22 - 23 °C (constant)	Issue Paper 5, p. 18
	Optimal growth - Unlimited food - Limited food	 12 - 16 °C (constant) 8 - 12 °C (constant)	 Issue Paper 5, p. 90; Selong et al. 2001; Bull trout peer review 2002, as cited in EPA 2003
	Highest probability to occur in the field	12 - 13 °C (daily maximum)	Issue Paper 5, p. 90; Issue Paper 1,[2] p. 4 (Table 2); Dunham et al. 2001 and Bull trout peer review 2002, as cited in EPA 2003
	Competition disadvantage	>12 °C	Issue Paper 1, pp. 21 - 23; Bull trout peer review 2002, as cited in EPA 2003

[1] McCullough, D.A., S. Spalding, D. Sturdevant, and M. Hicks. 2001. *Issue paper 5: summary of technical literature examining the physiological effects of temperature on salmonids.* EPA-910-D-01-005. U.S. Environmental Protection Agency. 114 pp.

[2] Issue Paper 1: Sauter, S.T., J. McMillan, and J. Dunham. 2001. Salmonid behavior and water temperature. Prepared as part of EPA Region 10 temperature water quality criteria guidance development project.

Salmon and Steelhead Spawning Through Fry Emergence: 13°C (55.4°F) 7DADM [OAR 340-041-0028(4)(a)]

Oregon adopted this criterion to protect salmon and steelhead juvenile spawning through fry emergence. This criterion is identical to the criterion recommended in the EPA Temperature Guidance and what EPA proposed in its water quality standards for Oregon for this use. The diurnal variation that occurs when this criterion is applied late fall through spring is likely less than the diurnal variation in the summer so EPA hypothesizes that this 13°C 7DADM criterion would result in maximum weekly mean between 10-12°C for a typical stream. This criterion is designed to protect spawning, egg incubation, and fry emergence for salmon and trout. Meeting this criterion at the onset of spawning for salmon and at the end of incubation for steelhead trout will likely provide protective temperatures for egg incubation (6 to 10°C (43 to 50°F)) that occurs over the winter (salmon) and spring (trout), assuming the typical annual thermal pattern. This criterion is designed to:

(1) protect ripe gametes inside adults during the weeks just prior to spawning [less than 13°C (55°F) constant],

(2) provide temperatures at which spawning is most frequently observed in the field [4 to 14°C (39 to 57°F) daily average], and

(3) provide protective temperatures for egg incubation [4 to 12°C (39 to 54°F) constant for good survival and 6 to 10°C (43 to 50°F) constant for optimal range] that occurs over the winter (salmon) and spring (trout), assuming the typical annual thermal pattern (see Table 1).

Core Cold Water Habitat: 16°C (61°F) 7DADM [OAR 340-041-0028(4)(b)]

Oregon adopted this criterion to protect core cold water habitat, which includes waters that support core salmon and steelhead juvenile rearing, adult salmon holding prior to spawning, and/or adult and sub-adult bull trout foraging and migration during the summer months (ODEQ 2003a). This criterion is identical to the criterion EPA recommended in the Temperature Guidance and proposed in its water quality standards for Oregon for this use, which roughly translates to a 13°C maximum weekly mean, and an equivalent constant temperature of 14.5°C (58°F) for comparison to juvenile growth studies at constant temperatures. This criterion is designed to:

(1) protect juvenile salmon and steelhead from lethal temperatures [23 to 26°C (73 to 79°F) constant];

(2) provide conditions during the period of summer maximum temperature and other times of the year that are in the optimal range when food is limited for juvenile growth [10 to 16°C (50 to 61°F) constant];

(3) protect against temperature-induced elevated disease rates [14 to 17°C (57 to 63°F) constant];

(4) provide temperatures that juvenile salmon and trout prefer, as demonstrated by studies indicating fish in high densities at these temperatures [10 to 17°C (50 to 63°F) constant

or less than 18°C (64°F) 7DADM] (see Table 1);

(5) protect salmon and steelhead from competitive disadvantage with cool and warm water species which can occur when average temperatures are greater than 15°C and maximum temperatures exceed 17-18°C (see WDOE 2002 pp. 67);

(6) provide conditions during the period of summer maximum temperatures that protect adult and sub-adult foraging and migration [less than 15°C] (see EPA 2003 pg 27; and Bull Trout Peer Review 2002); and

(7) provide conditions that protect chinook salmon that are holding over the summer prior to spawning in late summer-early fall (see EPA 2003).

This numeric criterion applies during the warmest times of the summer, the warmest years (except for unusual warm conditions as per OAR 340-041-0028(12(c)), and throughout the water body, including the lowest downstream extent of the waterbody designated for this use, which means that the 7DADM temperatures will be cooler than 16°C most of the time where this use occurs. This is true because: 1) if the criterion is met during the summer maximum period, then temperatures will be colder than that value during the rest of the year, 2) because the criterion must be attained at the furthest point downstream where this use is designated, temperatures will generally be colder where the use occurs upstream due the effect of elevation on temperature (e.g., thermodynamics), and 3) the criterion must be met in the warmest years (except for unusual warm conditions as per OAR 340-041-0028(12(c)), so that in most years, the waters will be colder.

Salmon and Steelhead Juvenile Rearing and Migration: 18°C (64°F) [OAR 340-041-0028(4)(c)]

Oregon adopted 18°C (64°F) to protect waters designated for juvenile rearing and migration. This criterion is the same as the criterion recommended in EPA Temperature Guidance and EPA's proposed Oregon water quality standards to protect this use. This use designation and criterion recognizes the fact that salmon and trout juveniles will use waters that have higher temperatures than their optimal thermal range during the summer months and that this is a natural phenomenon (see Temperature Guidance). This criterion (which roughly translates to a 15°C maximum weekly mean and an equivalent constant temperature of 16.5°C (62°F) for comparison to juvenile growth studies at constant temperatures) is designed to:

(1) protect against lethal conditions for both juveniles and adults [21 to 22°C (70 to 72°F) constant];

(2) prevent migration blockage conditions for migrating adults [21 to 22°C (70 to 72°F) average];

(3) provide near optimal juvenile growth conditions (under limited food conditions) during the summer maximum conditions and optimal conditions during the rest of the year [10 to 16°C (50 to 61°F) constant];

(4) protect adults and juveniles from high disease risk and minimize the exposure time to temperatures that can lead to elevated disease rates [14 to 17°C (57 to 63°F) constant]; (see Table 1); and

(5) protect salmon and steelhead from a competitive disadvantage with cool and warm water species which can occur when average temperatures are greater than 15°C and maximum temperatures exceed 17-18°C (see WDOE 2002).

Data and information in the record indicates that salmon and steelhead will use waters that are warmer than their optimal thermal range during the summer, and that portions of rivers and streams in the Pacific Northwest that historically supported this use were naturally (i.e., absent human impacts) warmer than the optimal thermal range for salmonids during the period of summer maximum temperatures. This criterion is designed to protect this use by minimizing potential adverse effects, while recognizing salmon and steelhead will exploit waters where some minor adverse effect may occur to individual fish (see Temperature Guidance). Adverse effects that may occur, but which this criterion will minimize, include decrease juvenile growth, increase disease risk, and increase competition with cool and warm water species during the period of summer maximum temperatures. The rivers with the greatest potential for these adverse effects to occur are ones with small diurnal temperature variation such that fish are exposed to average temperatures in the 16-18°C range for multiple days. However, as discussed earlier, a typical river would have a 15°C maximum weekly mean if it met the 18°C 7DADM criterion, thus in a typical river the above adverse effects would be minimal if it all.

Further, this numeric criterion applies during the warmest times of the summer, the warmest years (except for unusual warm conditions as per OAR 340-041-0028(12(c)), and throughout the water body, including the lowest downstream extent of the waterbody designated for this use, which means that the 7DADM temperatures will be cooler than 18°C most of the time and places where this use occurs for the reasons discussed in the previous paragraphs.

Moreover, ODEQ data has shown that many rivers that meet this criterion will only experience water temperatures above 15°C for a short durations over the course of a summer. Thus, in many Oregon streams with this criterion, no adverse effects would be expected.

Salmon and Steelhead Migration: 20°C (68°F) and Sufficiently Distributed Cold Water Refugia [OAR 340-041-0028(4)(d)]

Oregon adopted a 20°C (68°F) maximum 7DADM numeric criterion in conjunction with a narrative criterion that requires the presence of sufficient cold water refugia to protect salmon and steelhead migration. This criterion is the same as that recommended in the EPA Temperature Guidance and its proposed water quality standards for Oregon to protect this use. This criterion protects the designated use for the reasons described in the Temperature Guidance and supporting information. This 20°C (68°F) criterion roughly translates to a maximum weekly mean temperature of about 19 to 20°C (66 to 68°F) because the large mainstem rivers where this use is applies have little diurnal variation in the summer months. Oregon defines cold water refugia as portions of a waterbody where, or time during the diel temperature cycle when, the water temperature is at least 2°C colder than the daily maximum temperature (OAR 340-041–0001(10)).

EPA believes that a 20°C (68°F) criterion accompanied by a narrative criterion to ensure the presence of sufficient cold water refugia would protect migrating juveniles and adults from lethal temperatures, prevent migration blockage conditions (see Table 1), and protect this use.

This criteria is intended protect the use and minimize the adverse effects to migratory salmon

and steelhead, while taking into account the natural conditions that salmon and steelhead likely experienced historically. As discussed in the EPA Temperature Guidance, at some locations and times, some adverse effects may occur for individual salmon and steelhead, such as increased disease risk, increased stress, and decreased swimming performance in migrating adults and impaired smoltification, reduced growth, and increased predation and competition for late emigrating juveniles (e.g., fall chinook in the Columbia and Snake Rivers). However, based on preliminary TMDL studies on the Columbia, Snake, and Willamette rivers, EPA believes that maximum temperatures likely reached or even exceeded 20°C in the rivers where this criterion applies prior to human alterations of the rivers, but that these conditions were protective based on the presence of more temperature diversity.

Further, river systems in the Pacific Northwest naturally exhibit a transition in dominance from cold water species to cool and warm water species based on the river temperature. Although cold water species, such as salmon and steelhead exploited and thrived in the cold waters of the Pacific Northwest prior human influence on temperatures, native cool and warm water species also existed. Therefore, it is reasonable to conclude that historically there were waters that salmon and steelhead used to some extent but were preferably suited for cool water species. This criterion, in part, is designed to protect those waters that are a transition zone from cold to cool water species dominance.

EPA believes that while some adverse effects would occur with the 20°C 7DADM criterion during the summer months, those adverse effects would likely be attributable to natural conditions and that the adverse effects would not undermine the protection of this use. EPA believes this is true because most migrating adults and nearly all migrating juveniles (except for late migration fall chinook), will migrate through these waters during other times of the year when temperatures are colder than the summer maximum condition. Those that do migrate during the summer could tolerate 20°C maximum temperatures (plus the cold water refugia) for a period of time without experiencing extensive harm. The added provision that the seasonal thermal pattern in the Columbia and Snake Rivers must reflect the natural seasonal thermal pattern ensures colder temperatures other times of the year in these rivers.

As discussed in the EPA Temperature Guidance, EPA believes that even though natural maximum temperatures likely reached 20°C historically, temperature diversity in the rivers provided cold water refugia, which fish could use to avoid maximum temperatures. As such, EPA believes Oregon's added provision to provide sufficient cold water refugia is an important part of the overall criteria to protect this use. Under EPA's regulations, states are authorized to establish narrative criteria or criteria based upon monitoring methods where numerical criteria cannot be established or to supplement numerical criteria (40 C.F.R.131(3)(b) and 131.11(b)(2)). Without extensive monitoring and modeling in the waterbodies where this use is designated, it is impossible to know at this time the specific locations and times in the waterbody where cold water refugia currently exist or may potentially exist. Thus, the use of supplemental narrative criteria in this situation is reasonable and appropriate.

All of the waterbodies currently designated for this use currently are on the 303(d) list of impaired waters and will continue to be on the 303(d) list because they exceed the 20°C numeric criteria. As a practical matter, because these waters are all listed as impaired, the implementation of the narrative criterion to protect cold water refugia must occur when the State establishes Total Maximum Daily Loads (TMDLs) as required by the CWA. Because the CWA requires TMDLs to be established to meet water quality standards, the State will conduct the monitoring and modeling to identify cold water refugia sufficient to meet this narrative

requirement. TMDLs must meet both numeric and narrative criteria. When applying this narrative criteria in the context of a TMDL, the existing cold water refugia will be identified and determined. Temperatures reflective of existing areas of cold water refugia will be identified and protected in the TMDL. Thus, the TMDL would be the document where the narrative cold water refugia criterion is translated into numeric terms for specific locations and times. If the existing cold water refugia is insufficient to protect the use, then additional cold water refugia sufficient to protect the use would also be identified and expressed in numeric terms in the TMDL. Depending on how the TMDL is structured, the expression of cold water refugia in numeric terms might also occur during the development of watershed plans to implement the TMDL rather than in the TMDL itself. In addition, the watershed plans may contain measures to protect and restore the cold water refugia.

EPA does not think it reasonable to disapprove the 20°C criterion along with the narrative requirement to establish cold water refugia, because EPA has record information that the specific waterbodies to which this criterion applies did not attain a more stringent temperature throughout in the era when these waters attained the designated use of salmonid migration. Thus the more stringent criterion is not necessary to protect the designated use.

EPA expects the cold water refugia provision to be primarily considered in NPDES permits after a TMDL is completed because that is best forum to evaluate the sufficiency of cold water refugia for a waterbody. Once the TMDL is completed, however, any wasteload allocations to protect either existing or new cold water refugia must be incorporated into NPDES permits during the next permit cycle.

Lahontan Cutthroat Trout or Redband Trout: 20°C (68°F) [OAR 340-041-0028(4)(e)]

Lahontan cutthroat trout are resident trout located in the interior great basin area of southeastern Oregon. Only a small portion of the Lahontan cutthroat trout range, which extends largely through Nevada and also into southwestern Idaho, is located in Oregon. Because Oregon has based its current temperature criteria primarily on anadromous salmon and steelhead and rainbow trout, some have expressed concern that the criteria are not appropriate for the interior resident trout of the more arid portions of the State.

Oregon contracted with Dr. Jason Dunham to review and summarize the available information on the temperature requirements of Lahontan cutthroat trout and to make recommendations on an appropriate temperature criterion. His report (Dunham 1999) recommended a numeric criterion for Lahontan cutthroat trout of 20°C (68°F) as a 7DADM. The U.S. Fish & Wildlife Service Recovery Plan for Lahontan Cutthroat Trout (USFWS 1995a), states that optimal habitat is characterized by an average maximum summer temperature of less than 22°C (72°F). A 7DADM of 20°C (68°F) would present a very low possibility of exceeding 22°C (72°F) on the warmest day of the 7 day period. Dunham (1999) concluded that this criterion would protect Lahontan cutthroat trout from both chronic and acute impacts and noted that this value includes a 2°F margin of safety, as recommended by the EPA Temperature Guidance at the time (National Academy of Sciences 1972).

Bull Trout Spawning and Juvenile Rearing: 12°C (54°F) 7DADM [OAR 340-041-0028(4)(f)]

Oregon adopted 12°C (54°F) 7DADM to protect waters designated for bull trout spawning and juvenile rearing along with a provision, at four specific reservoir locations *(Elizabeth Materna* memorandum and addendum; *Mt. Hood Recovery Plan*), to limit the temperature increase to 0.3°C when temperatures are 9°C or greater or to1°C when temperatures are 9°C or cooler. This criterion is consistent with the criteria recommended in the Temperature Guidance and proposed by EPA in its proposed Oregon water quality standards. The 12°C 7DADM criterion roughly translates to a maximum weekly average temperature of 11°C, and an equivalent constant temperature of 11.5°C (52.7°F) for comparison to juvenile growth studies at constant temperatures. The criterion is designed to:

(1) protect juvenile bull trout from lethal temperatures [22 to 23°C (72 to 73°F) constant];

(2) provide conditions during the period of summer maximum temperature and other times of the year that are in the optimal range when food is limited for juvenile growth [8 to12°C (46 to 54°F) constant];

(3) provide temperatures where juvenile bull trout are not at a competitive disadvantage with other salmonids [greater than 12°C (54°F) constant]; and

(4) provide temperatures that are consistent with the temperatures observed in field studies identifying where juvenile bull trout have the highest probability to occur [12 to 13°C (54 to 55°F) daily maximum] (see Table 2).

EPA's Temperature Guidance recommends a temperature of 9°C (48°F) to protect bull trout spawning. However, because bull trout generally spawn in the late summer and fall in the same waters where young and resident juvenile bull trout rear, EPA indicated in its Temperature Guidance that it may be appropriate to protect a combined bull trout spawning and rearing use with a single numeric temperature criterion [12°C (54°F)] that limits summer maximum temperatures. EPA has concluded it is protective to do this in Oregon because best professional judgment based on the thermal temperature patterns in Oregon bull trout waters indicates that if the summer maximum temperature is 12°C (54°F), temperatures will naturally decrease to levels that are protective of bull trout spawning [9°C (48°F)] when it occurs in the late summer and fall, and further decrease to protect egg incubation [2 to 6°C (36 to 43°F)] when it occurs over the winter. Additionally, there may be some areas where bull trout spawn in the summer, but in those situations (e.g., high elevation streams), the existing summer maximum temperatures are likely to be colder than 12°C (54°F) and in those situations the protection of existing cold water provisions would apply.

The 12°C (54°F) 7DADM criterion alone may not protect spawning in four waterbodies downstream of reservoirs. In these waters, dams delay the natural seasonal cooling of waters in the fall to an extent that may prevent waters from cooling to 9°C (48°F) downstream at times of the year when bull trout spawning occurs. The four locations are segments immediately downstream of Laurence Lake Reservoir (Hood River Basin on the Middle Fork of the Hood River); Melhorne Reservoir and Clear Creek Reservoirs (Pine Creek Sub-Basin of Powder Basin); and Carmen Reservoir (behind Carmen dam in the Willamette Basin, on the McKenzie River above Blue River) *(Elizabeth Materna* memorandum and addendum; *Mt. Hood Recovery Plan*). For this reason, Oregon adopted the above temperature increase limitations at these

reservoirs as criteria to specifically to protect bull trout spawning and egg incubation at these reservoirs.

Responses to Significant Comments:

Comment: Concern was raised over the protectiveness of the 7DADM metric and whether it masks exposure to sub-lethal and lethal temperatures.

EPA Response: As discussed above, because the criteria are primarily designed to protect against chronic sub-lethal effects (i.e., much lower than levels that cause lethal effects), the few hours in the week that a river might experience temperatures slightly higher than the 7DADM value will not cause lethal effects and because these temperatures will not be sustained, they will not cause chronic effects.

Comment: There was concern over the application of the metric to point sources.

EPA Response: The metric is used to determine if the water body meets the applicable criteria. NPDES permits are written such that the water body meets the applicable criteria. EPA approves the criteria expressed with this metric because they protect the designated use. Further, EPA believes that these criteria can be implemented in point source permits.

Comment: With regard to the 20°C plus cold water refugia criterion, there is concern with how such a criterion could be implemented and how it could be determined that the criterion is being met. Without defining how you will implement the cold water refugia, the 20°C criterion in not approvable.

EPA Response: See discussion elsewhere in this document and record on how EPA expects the cold water refugia provision will be implemented.

Comment: The cold water refugia definition is too limited and inconsistent with EPA's temperature guidance.

EPA Response: Oregon modified its cold water refugia definition in the final rule and Oregon's rule is consistent with the EPA Temperature Guidance because both call for the protection and restoration of cold water refugia - both spatial and temporal. Oregon uses the terms "where, or times during the diel temperature cycle when, the water temperature of the adjacent well mixed flow of the water body." (340-041-0002 (10). and ".... cold water refugia that is sufficiently distributed so as to allow salmon and steelhead migration...." and "Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern." (340-041-0028(4)(d)). The definition and description of cold water refugia given in the Temperature Guidance states "Critical aspects of the natural thermal regime that should be protected and restored include: the spatial extent of cold water refugia (generally defined as waters that are 2°C colder than the surrounding water), the diurnal temperature variation, the seasonal temperature variation (i.e., the number of days at or near the maximum temperature), and shifts in the annual temperature pattern. (EPA, 2003, pgs 28, 29). Although the two definitions are not word for word the same, they convey the same meaning and have the same performance objective in that both call for the protection and restoration of spatial, temporal, and seasonal patterns of cold water refugia such that it will protect salmonid rearing and migration through waters that otherwise would have a numeric criterion of 20° C.

*Comment***:** Rule must make clear that numbers mean that colder water will occur above the lowest point in the stream reach. Cooler criteria must apply upstream.

EPA Response: In order for the warmest, furthest downstream area of the river to meet the criterion, waters upstream will generally need to be colder than the criterion based on the thermodynamics of the river. The gradation of criteria from 20°C, 18°C, 16°C, and 12°C provides this upstream colder water protection in order to meet these criteria at the lowest downstream point for which each of the criteria apply. Point source permits must ensure the discharge does not contribute to a downstream exceedance.

Comment: Commenter questioned the biological basis for limitations on warming in the fall, winter, and spring when a waterbody complies with the biological criteria.

EPA Response: One way to protect uses is to apply a criterion year around, which effectively limits the summer maximum temperature. As discussed in EPA's Temperature Guidance, in general, increased summertime temperatures due to human activities are the greatest water temperature concern for salmonids in the Pacific Northwest, although temperatures in the late spring and early fall are also a concern in some areas. EPA therefore believes it is appropriate that temperature criteria focus on the summer maximum conditions to protect the coldwater salmonid uses that occur then. Generally, improving river conditions to reduce summer maximum temperatures will also reduce temperatures throughout the summer and in the late spring and early fall (i.e., shift the seasonal temperature profile downward). Thus, the data indicate that, because of the natural annual temperature regime, providing protective temperatures during the summer maximum period will in many areas provide protective temperatures for more temperature sensitive uses that occur other times of the year. However, EPA also recommends criteria be applied to protect non-summer uses, such as spawning to provide an added degree of protection to the criteria designed to protect the summer maximum. EPA finds Oregon's criteria are protective, however, EPA notes that as a legal matter, states may adopt more stringent water quality standards than necessary under the CWA. Arkansas v. Oklahoma, 503 U.S. 91107 (1992); City of Albuquerque v. Browner, 97 F.3d 415, 426 (10th Cir. 1996).

Comment: EPA's implication that widespread utilization of the salmon and trout juvenile rearing and migration use designation is acceptable because "salmon and steelhead juveniles will use waters during the summer that have higher temperatures than their optimal thermal range" is without scientific basis. Preamble at 25. It is relevant whether a species life cycle stage will use water at all but it is at least as relevant what the effect on those fish will be of using such less-than-optimal habitat. EPA's statement begs this last question and suggests that as long as the fish will use the habitat, it must be acceptable. That is an inappropriate basis upon which to establish this use designation. Berman at 17-22, 44-46. At a minimum EPA needs to include a requirement for cold water refugia in this use designation in order to justify it. The creation of a use designation that provides for inadequate protection for chinook, chum, coho and steelhead rearing in July and August is arbitrary.

EPA Response: It is important to note that in most of the waters where this use in designated, the current summer maximum 7DADM exceeds 20C. Thus, reducing temperatures to 18C will be beneficial. As discussed above, river systems in the Pacific Northwest naturally exhibit a transition in dominance from cold water species to cool and warm water species based on the river temperature. Although cold water species, such as salmon and steelhead exploited and thrived in the cold waters of the Pacific Northwest prior human influence on temperatures, native

cool and warm water species also existed. Therefore, it is reasonable to conclude that historically there were waters that salmon and steelhead used to some extent but were not optimally suited for them. This criterion, in part, is designed to protect those waters that are still preferential to cold water salmonids, but represent the start of a transition zone from cold to cool water species dominance. Also, the 18°C maximum 7DADM criterion for salmon and trout juvenile rearing and migration applies at the furthest point downstream where this use is designated and as a summer maximum. Due to this point of application, temperatures will generally be colder where the use occurs upstream as well as at times of the year beyond the 7-day summer maximum period, thus providing temperatures that are within the optimal range for salmon and trout juvenile rearing and migration. Therefore, establishing a narrative provision for cold water refugia is not necessary to protect the designated use.

2.6 TEMPERATURE NATURAL CONDITIONS CRITERIA [OAR 340-041-0028(8)]

Action: EPA approves this provision because it is consistent with the Clean Water Act and its implementing regulations.

1. Natural condition is protective because the designated uses evolved in the natural condition.

The above provision is consistent with the recommendation in EPA's Temperature Guidance to include narrative criteria in water quality standards stipulating that where the natural temperature conditions (i.e., the natural thermal potential) of a waterbody are warmer than the numeric criteria, the natural thermal potential conditions become the applicable criteria for the water body. EPA recommended inclusion of such a provision in state water quality standards because it is likely that, during certain times of the year, portions of rivers and streams may naturally exceed the numeric criteria. Water temperatures in rivers and streams vary naturally, and the technical workgroup of the EPA Temperature Guidance concluded that prior to human disturbance, water temperatures were likely warmer than optimal for some rivers, some of the time (EPA 2001b). Thus, warmer than optimal temperatures and even temperatures that may, over a short period of time, adversely affect salmonids, likely occurred in some river locations some of the time as a natural part of the Pacific Northwest ecosystem, which nonetheless supported the uses the State seeks to protect with the temperature criteria.

The temperature criteria (including the numeric criteria and this narrative criterion) are designed to protect various salmonid life stages, and in turn, healthy salmonid populations. EPA views temperature criteria based on natural conditions to be fully protective of salmonid uses, even if the natural conditions are warmer than the applicable numeric temperature criteria in some waterbodies, because river temperatures prior to human impacts clearly supported healthy salmonid populations (EPA 2001a). Even if the natural conditions criteria would result in temperatures that cause adverse effects to salmonids in some river segments during certain time periods, those adverse effects would be viewed as naturally occurring adverse effects that do not threaten the designated salmonid uses overall.

2. Narratives are permitted by EPA's regulations at 40 C.F.R. §§ 131.3(b) and 131.11(b)(2).

For the reasons discussed above in connection with OAR 340-041-0007(2), EPA has determined

that it is appropriate for the State to use a narrative natural condition criterion to supplement the numeric temperature criteria. However, some of the considerations discussed in the 1997 EPA policy memorandum and the ANPRM discussed in Section 2.3, Statewide Narrative Criteria, also apply to this narrative criterion, and will be discussed in the following paragraphs.

3. The State regulation represents a scientifically defensible approach to identifying criteria that represent the natural condition.

As described in EPA's Temperature Guidance, in order to assert that this narrative natural condition temperature criterion fully supports salmonids, it must truly reflect conditions absent human impacts. This is consistent with EPA's policy statements regarding natural conditions more generally, including the 1997 EPA guidance memorandum and the ANPRM discussed previously. Oregon has proposed to determine the natural thermal potential temperatures of all or a portion of a waterbody to derive the natural conditions criterion that would supersede the numeric temperature criteria. The definition of natural thermal potential in Oregon's standards and the methods Oregon has described that it will use to derive the natural conditions criterion in its letter to EPA from Mike Llewellyn dated December 19, 2003 are consistent with the natural conditions concept and implementation recommendations provided in EPA's Temperature Guidance.

4. In addition, Oregon's articulation of the methods for implementation support EPA's decision that Oregon's natural conditions provisions ensure that natural conditions criteria will be derived in a scientifically defensible manner.

EPA's Temperature Guidance also recommends that when estimating natural conditions (i.e., natural thermal potential) on a case-by-case basis in the context a TMDL, 303(d) listing, NPDES permit, or a 401 certification, the best available scientific information and techniques should be utilized. EPA's Temperature Guidance discusses what EPA considers are the best available methods to estimate the natural conditions for temperature. Oregon has described the methods it will use to determine natural condition for temperature in its letter to EPA from Mike Lllewellyn dated December 19, 2003. These methods are consistent with those recommended in EPA's Temperature Guidance.

5. EPA notes that the process will allow for public and EPA oversight.

Both the ANPRM and the 1997 EPA policy memorandum suggest that there be an opportunity for public notice and comment on natural background determinations. Those documents contemplated the use of natural background determinations in site-specific criteria, which would be subject to EPA review and approval. Implementation of OAR 340-041-0028(8) in some instances would involve adoption of site-specific criteria. In addition, implementation may occur in contexts that would not involve adoption of revised criteria, such as identification of natural condition through a listing of impaired water bodies or development of TMDLs under CWA § 303(d), or in issuance of NPDES permits. Each of these contexts require state public processes and EPA oversight. This is consistent with the approach that EPA recommended in its Temperature Guidance.

EPA anticipates that Oregon will use its temperature natural condition criteria primarily in the context of a TMDL or 303(d) listings. For waterbodies where elevated temperatures are likely a result of both human activities and natural conditions, the TMDL typically provides the forum where the natural thermal potential is determined. For waterbodies where existing conditions are

believed to be natural conditions, Oregon may make a natural conditions determination for those waterbodies as a basis not to list them on the 303(d) list. 40 CFR 130.7(b) requires that states or tribes list waterbodies that do not meet the applicable water quality standard which includes waterbody uses, criteria, and antidegradation requirements. In demonstrating the natural condition of a waterbody as a basis for not listing the water on the 303(d) list, the state or tribe would also need to consider the designated and existing uses. Oregon's natural thermal potential estimation will take into account only factors contributing to a natural temperature condition, not any factors influenced by any past or present anthropogenic activities.

Under the CWA, EPA is required to approve or disapprove Oregon's TMDLs and 303(d) listing of impaired waters. If the natural thermal potential determination in the TMDL is inconsistent with Oregon's natural condition temperature criterion, EPA has the authority to disapprove the TMDL based on its inconsistency with Oregon's WQS. If Oregon relies on its natural potential determination as a basis not to list on the 303(d) list a waterbody that exceeds the numeric criteria, EPA has the authority to disapprove the 303(d) list based on its inconsistency with Oregon's WQS. In addition, natural conditions determinations in TMDLs and 303(d) lists would be subject to public notice and comment through the requirements that apply generally to those two types of actions (40 CFR § 130.7(c)(1)(ii) and 130.7 (d)(2)).

Under the CWA, EPA has oversight authority of state-issued NPDES permits, and EPA has the authority to object and issue the permit if the state permit does not meet all applicable criteria, including appropriate application of the natural conditions criterion. In addition, the public is entitled to notice and an opportunity for comment on any state-issued NPDES permit, which would ensure public review of a natural conditions determination that is made in that context. NPDES permits are subject to judicial review under state procedures for state-issued permits (40 C.F.R. § 123.30) or, following an administrative challenge to EPA under 40 C.F.R. § 124.19, judicial review in federal court under CWA § 509(b), 33 U.S.C. § 1369(b).

6. EPA recognizes additional public notice commitments made by Oregon.

In addition to the required public participation processes required by regulations for the establishment of TMDLs, 303(d) lists, and issuance of NPDES permits, Oregon has committed in its letter to EPA from Mike Lllewellyn dated February 4, 2004 to list the waterbodies where "natural conditions" findings have been made on the DEQ web page to ensure that the public is aware and notified of natural conditions determinations.

Responses to Significant Comments:

Comment: Natural conditions do not take into account the variability within a stream's profile.

EPA Response: Natural condition is a condition, not a number, and encompasses the entire "profile" of the water, including, where appropriate, places where the water remains cooler even in the presence of a catastrophic event. The definition of "natural thermal potential" in OAR 340-041-0002(35) (which is how the natural condition is implemented for temperature) requires "the determination of the thermal profile of a waterbody using best available methods of analysis and the best available information on site potential riparian vegetation, stream geomorphology, stream flows, and other measure of natural conditions." Thus the rule requires that the entire natural thermal profile of the waterbody serve as the basis for the temperature natural condition determination, not a single number.

2.7 PROTECTING COLD WATER [OAR 340-041-0028(11)]

Action: EPA approves this provision because it is consistent with Clean Water Act § 303(c)(2)(A) and its implementing regulations at 40 CFR § 131.6, 131.11(a) and 131.11(b)(2). EPA finds Oregon's cold water provisions will protect Oregon's designated uses for the reasons discussed in the Temperature Guidance. As stated on pp. 32-33 of the Temperature Guidance, EPA has determined it is important to balance the effects of warmer waters by adopting provisions to protect waters that are colder than their optimal thermal range. Oregon has adopted one such approach. EPA recognizes some differences between Oregon's cold water provision and the one that EPA proposed, but EPA has determined that Oregon's cold water provision will result in additional protection for salmonid species throughout the State. As was discussed in Section 2.5 (Temperature Numeric Criteria for Oregon's Salmonid Use Designations), the numeric criteria are protective of the designated salmonid uses.

In waters inhabited by ESA-listed salmonids, Oregon's cold water protection provisions effectively maintain current summer maximum temperatures that are colder than the applicable numeric criteria and only allow a 0.3°C (0.5°F) cumulative increase for all sources combined at the point of maximum impact. As discussed in Section 2.8 (Human Use Allowance), EPA has concluded that a 0.3°C (0.5°F) increase in water temperature is insignificant. Further, the cold water provisions limit the warming of rivers during the other times of year as well. Since this provision is intended to protect the diversity of temperature conditions across the landscape that historically supported sustainable salmonid populations and limit the warming of waters that are already colder than the fully protective applicable numeric criteria, EPA has found that this narrative criterion is fully protective of the designated uses.

Response to Significant Comments:

Comment: Concern was expressed over how the Department will implement the criterion so that waters colder than the criterion are not warmed more than a cumulative 0.3°C.

EPA Response: EPA understands that this provision will be applied for each regulatory action on a case-by-case basis. EPA views this measure as providing supplementary protection to the numeric criteria and general antidegradation procedures, especially prior to the establishment of a TMDL. TMDLs, in many cases, will provide added protection to these colder waters because upstream waters will need to be colder to meet downstream criteria and the load allocation will be established to ensure this.

Comment: One comment expressed concern about how the cold water provision applies to very cold waters (<10°C or 10°C to 12.8°C).

EPA Response: The applicable temperature criteria to which the cold water provision (OAR 340-041-0028(11)(b)) applies is the salmon and steehead spawning use. This use will be protected by the numeric criterion. However, where colder temperatures exist as defined by Oregon, small temperature increases from point sources are allowed but limited in this rule. A 0.5°C and/or 1.0°C increase in temperature from point source discharges will result in ambient water temperatures that are much below the protective criteria.

Comment: One comment expressed concern that the cold water protection provision would not be effective because it did not automatically become a numeric criterion.

EPA Response: The cold water provision does not create a new criterion, but limits increases in temperature to an insignificant amount above the colder ambient temperature in order to protect existing cold water. This provision applies independently of the numerical and natural conditions criteria and provides an additional measure of protection for salmonid uses. EPA has determined that the Protecting Cold Water provision does not need to have the existing cold water temperatures become the numeric criteria in order to protect the designated uses. This is because EPA has determined that the time and place use designations, along with the temperature criteria in Oregon's rule are sufficient to protect the designated uses. Waters that currently colder than the criteria will be protected by this provision when regulatory action occur, such as when NPDES permits and 401 certifications are issued or when non-point control programs are implemented in these waters. Thus, the existing cold temperatures will be protected by this provision and will not be allowed to be significantly warmed. Further, during the TMDL process for a basin or sub-basin that has impaired waters for temperature, TMDL allocations will be established to maintain current conditions (or possibly reduce temperatures if needed to meet criteria downstream) in those water segments in a basis or sub-basin that are currently colder than the criteria.

2.8 HUMAN USE ALLOWANCE [OAR 340-041-0028(12)(b)]

Action: EPA approves Oregon's human use allowance provision as consistent with the Clean Water Act and its implementing regulations at 40 C.F.R. § 131.5(a)(2), 131.6(c); 131.11 and 131.13. This provision is also consistent with the recommendations in the Temperature Guidance to include a provision in water quality standards that allows the water temperatures in a waterbody to be insignificantly higher than the otherwise applicable criteria. Such a provision is to allow an insignificant level of heat into the river from human activities when the natural condition criteria is the applicable criteria or where waters currently exceed the biologically-based numeric criteria. Absent such a provision, 1) no heat would be allowed from human activities when the natural condition criteria is the applicable criteria; and 2) when issuing NPDES permits in temperature impaired waters, it could be interpreted that effluent limits would have to meet numeric criteria end-of-pipe when that is not necessary to meet the otherwise applicable criterion in the waterbody. EPA has concluded that both of these results are unnecessarily restrictive for the protection of salmonid uses, and would lead to unnecessary and costly expenditures, and are not consistent with the goals of the CWA. Therefore, EPA has recommended such a provision in its Temperature Guidance. Furthermore, EPA believes for reasons described below that this provision does not undermine the protection of uses provided by the numeric and natural conditions criteria.

As described in OAR 340-041-0028(12)(b)(A), an individual point source in a temperature impaired waterbody may only increase the temperature of 25 percent of the river by 0.3°C (0.5°F) above the applicable criterion. Thus, a given point source cannot cause the whole river to experience a temperature increase of more than 0.075°C above the applicable criterion. For purposes of calculating an NPDES effluent limit in accordance with this provision, it is assumed that the upstream temperature is exactly at the numeric criterion (e.g., assumed to be at the 18°C numeric criterion) even if the current river temperature is higher (e.g., 19°C or higher). Assuming this, it is then possible to calculate, using a mass-balance equation and the river and point source discharge flow rates, the effluent discharge temperature that would result in the river temperature increasing by 0.075°C (0.135°F). The result of this approach is that the NPDES limit is established in such a way that the point source meets the water quality standard (and thus, ceases to contribute to non-attainment of the standards) even if the river itself exceeds the water quality standard due to other sources. Eventually, as non-point sources are reduced

and other NPDES sources are limited in a similar way, the river itself will attain the water quality standard (i.e., at no point in the river will the temperature be higher than 0.3°C above the applicable criteria).

Theoretically, under provision OAR 340-41-0028(12)(b)(A), if five or more point sources were all discharging into a river at the same location it is possible for the cumulative temperature increase to be more than 0.3°C (0.5°F). Although theoretically possible, EPA is not aware of such a situation in Oregon and believes that NPDES discharges are spaced far enough apart in Oregon that this cumulative impact is not of concern and is discountable. First, a 0.075°C (0.135°F) increase from a single source is well below the 0.3°C (0.5°F), which as described below, EPA has concluded is insignificant. Second, an increase of 0.075°C (0.135°F) at the location of discharge would likely be essentially zero a few miles downstream due to natural energy equilibrium processes in a river.

As described in OAR 340-41-0028(12)(b)(B), after a completion of a TMDL, the maximum allowable temperature increase for all sources cumulatively is 0.3°C (0.5°F) above the applicable criterion. This provision ensures that when point and nonpoint sources are considered together, the allowable increase above the applicable criterion is insignificant.

EPA believes that a 0.3°C (0.5°F) or less increase in temperature is insignificant for the following reasons. First, a 0.3°C (0.5°F) temperature difference is well within the range of uncertainty of our understanding of the thermal requirements of salmonids, which is more in the range of ±0.5°C. This is because nearly all salmonid studies that examine the temperature effects on salmonids (i.e., lethality, growth, disease) are based on temperature increments of 1°C or more. Thus, while any determination of temperature criteria must examine the data and draw the line at some point, EPA finds, based on the data discussed in the Temperature Guidance, that establishing the effective criteria (i.e., numeric criteria plus human use allowance) at 13.3°C for salmon and steelhead spawning use; 12.3°C for bull trout juvenile rearing use; 16.3°C for core cold water habitat use; 18.3°C for salmon and trout rearing and migration use; and 20.3°C for migratory corridor use would also protect the respective designated uses. Second, monitoring measurement error for recording instruments typically used to monitor temperature in rivers is about ±0.2°C (0.4°F). In other words, this level of temperature increase is considered within the error band associated with typical temperature monitors. Third, when natural conditions are the applicable criteria, the error associated with the natural condition estimate is usually ±1°C or more, so a 0.3°C temperature difference is well within the band of uncertainty of the applicable criteria. In sum, EPA believes that a 0.3°C temperature difference is insignificant in the context of our scientific understanding of the data concerning water temperature and salmonids, and the addition of 0.3°C will still protect the designated use. It should be noted, however, that although a 0.3°C temperature difference is with the error bands of the considerations listed above, mathematical models can calculate the change in river temperature from point source heat loads to an infinitely small increment. Thus, the 0.3°C and the 0.075°C (for a single source) allowance is a useful benchmark for NPDES effluent calculation purposes.

It is also important to understand that heat is not a conservative pollutant like a toxic compound or a metal. River temperatures are in a dynamic equilibrium with air temperature and other heat processes in the environment, such that a small temperature increase (0.075°C for a single source) will be essential zero a few miles downstream. This can be illustrated by a simple example: take two cups of waters that are both at 20°C when the air temperature is 18°C. Add an 1/8 of a cup of hot water to one cup such that the resultant temperature in that cup is 20.3°C. After an hour or so both cups will be reach equilibrium with the air temperature (i.e., 18°C),

although it will take a little longer for the warmer cup to reach 18°C. Thus, after both cups reach equilibrium, the heat addition to the first cup is inconsequential.

The mass balance formula mentioned above to calculate an NPDES temperature effluent limit takes into account the significance of the point source heat load. For example, for a point source that has a flow of 100 mgd, river flow of 1,000 mgd, and an applicable criterion of 18°C, the end of pipe effluent limit would be 18.8°C [100X+1000(18)=1100(18.075)]. Thus, where the point source flow is significant relative to the river, the effluent limit would be very near the criterion. In this example the current river temperature may actually be 20°C, thus in this event, the end of pipe limit would actually be lower than the receiving water temperature. For a point source that has a flow of 1 mgd, river flow of 1000 mgd, and an applicable criterion of 18°C, the end-of-pipe limit would be 25.6 °C [10X+1000(18)=1010(18.075)]. Thus, due to the small point source flow, the allowable limit is higher than the first example. It is important to note that this limit may be further reduced to conform with the thermal plume limitation described in OAR 340-041-0053(2)(d), especially where the limit calculated by the mass balance formula is higher than 30°C.

Responses to Significant Comments:

Comment: There is no scientific or policy basis to allow for any additional warming for waters that are not in compliance with any criteria yet the proposed rule contains no restrictions tied to the actual water quality. Likewise, there is no basis to allow for any warming whatsoever of cold water refugia in migration corridors, any waters covered by the 18ºC or 20ºC criterion, waters covered by site specific criteria that exceed optimal biologically-based criteria, or superseding natural conditions criteria.

EPA takes the position that no matter how high the natural conditions, as defined by water temperatures alone, a 0.3ºC increment of warming from anthropogenic influences are considered acceptable. According to EPA, there is no temperature that is too high to warrant a prohibition on an anthropogenic increment. Therefore, even if the modeled natural condition temperature is such that it would cause an impairment to a particular life cycle stage, EPA's proposed rule allows for that temperature to become warmer.

EPA Response: For the reasons explained above, EPA considers an increase above the temperature criterion of 0.3°C for all sources cumulatively at the point of maximum impact and 0.075°C for a single source to be insignificant regardless of which criterion applies (i.e., 18°C, 20°C, or natural conditions). As the example above shows, when the current river temperature is higher than the criterion, application of this provision may result in point source effluent limit temperatures that are lower than the current river temperature for point sources with high flow relative to the river flow. Thus, it is important to recognize that this provision allows the insignificant allowance above the otherwise applicable criterion, not the current river temperature condition.

Comment: Cold water refugia are considered to be the last places for fish to live in some circumstances and for populations to thrive in others (although, the rules still do not define this well) and yet the proposed rules will allow some warming to what could be a negligibly lower temperature in the refugia. In some instances, these refugia may not be very big and they may be very important considering the sub-optimal criteria that will apply (e.g., 20ºC) and the actual temperatures that exist in the waterbody (e.g., well over 20ºC). There is simply no basis to allow for any anthropogenic impacts on such critical areas.

EPA Response: EPA agrees it is important to protect cold water refugia. In the event that a new or existing point source discharges into a river reach that currently has summer maximum temperatures lower than the applicable criteria, the protecting cold water provision (OAR 340-041-0028(11)) would apply, thereby protecting the existing cold temperatures.

Comment: Under Oregon's definition in the proposed rule, which excludes end-of-pipe measurements for point sources, all nonpoint source and most, if not all, point source heat inputs are defined as de minimis or less because they are not measurable at the point where the Department chooses to measure them.

EPA Response: End-of-pipe temperature limits are established in NPDES permits and monitoring of the effluent temperature prior to entering the river is a routine requirement in NPDES permits. Nothing in EPA's approval of these water quality standards prevents implementation of these standards by Oregon in a manner that will ensure achievement of these standards.

2.9 AIR TEMPERATURE EXCLUSION [OAR 340-041-0028(12)(c)]

EPA is acting on this provision to the extent it operates to modify the temperature criteria under certain unusually hot weather conditions for the purposes of 303(d) listing. EPA considers the last phrase of the provision (...and sources will not be considered in violation of this rule), to be an exercise of enforcement discretion by the State for individual sources and is not considered a standard for the purposes of CWA section 303(c); therefore EPA will not take action on it. The Clean Water Act does not require states to make standards directly enforceable; thus the extent to which states choose to do so is solely a matter of state law.

Action: EPA approves this provision (as stated above) as protective of the designated uses and consistent with the Clean Water Act and its implementing regulations at 40 C.F.R. § 131.11 (a)(1) and (b)(1)(iii). The bases for the protectiveness of all the temperature criteria have been addressed at Section 2.5 of this document (Temperature Numeric Criteria for Oregon's Salmonid Use Designations). This provision does not materially affect those numeric criteria. Rather, if an unusually hot period resulted in an exceedence of the applicable criteria, and if, during all other conditions, the waterbody attained the applicable criteria, the waterbody would not be listed on the 303(d) list and require a TMDL. In such an event, EPA views the waterbody to be fully supporting the uses and would not need a TMDL because the applicable criterion would be attained during nearly all of the year.

The rule defines unusually hot weather as days when the maximum air temperature is hotter than 90 percent of the annual maximum of the 7DADM, based on at least 10 years of data. The use of this metric assures that the determination of unusually hot weather is based on a significant period of data collection (10 years) and should assure that the determination of a hot weather event is actually an unusual statistical occurrence. In such an event, EPA finds it reasonable for Oregon to treat the waterbody to be fully supporting the uses and would not need a TMDL because the applicable criterion would be attained except for the brief period of time when any unusual hot air events occur and cause the water temperature to rise above the criteria. Statistically, water temperatures are unlikely to exceed the maximum temperature recorded in all other conditions by more than 1-2°C (EPA Temperature Guidance). This small increase in temperature above the criteria for an event that occurs so rarely will not undermine the

protection of the designated uses. This provision does not change the applicable criteria for the purposes of NPDES permitting or any CWA regulatory function except for the purposes of 303(d) listing under the narrowly specified conditions.

Responses to Significant Comments:

Comment: Does the air temperature exclusion apply only to the development of CWA 303(d)(1) lists and not to NPDES point sources? How is the provision protective of designated uses?

EPA Response: The proposed rule that Oregon made available to the public for comment on August 15, 2003, was slightly different than the final provision on this issue. The final rule clarifies that it only applies for the purposes of 303(d) listing. In essence, this provision applies to the use of certain waterbody data which represent the effect of unusually hot weather conditions on water temperature. When this data is the only basis for determining that a waterbody exceeds the applicable criteria for purposes of listing on the CWA 303(d) list, the State need not list the waterbody. The provision does not apply to the development of NPDES permit limits (i.e., it does not revise the criteria for the purposes of permitting). The provision does not revise the criteria necessary to protect the designated uses. It merely, under the circumstances discussed above, results in not listing a water on the 303(d) list unless or until additional data shows whether that waterbody is impaired in periods not deemed to be unusually hot.

2.10 SITE SPECIFIC CRITERIA [OAR 340-041-0028(13)]

Action: EPA approves this provision because it is consistent with the requirements of the Clean Water Act, § 303(c) and its implementing regulations at 40 CFR Part 131. Specifically, 40 CFR § 131.11(b)(1)(ii) provides states with the opportunity to adopt water quality criteria that are "...modified to reflect site-specific conditions." Site-specific criteria, as with all water quality criteria, must be based on a sound scientific rationale in order to protect the designated use(s). EPA has determined that the factors Oregon identified for consideration when calculating a site-specific criterion are generally appropriate for development of a scientifically-defensible site-specific criterion. Oregon will need to submit each individual site-specific criterion to EPA so that EPA can determine if it complies with CWA Section 303(c) and the implementing regulations at 40 CFR § 131. Consistent with 40 CFR § 131.5 and 131.6, Oregon's regulation states that the site-specific criterion will not become the applicable criterion until EPA has approved it.

Responses to Significant Comments:

Comment: It is unclear what the intent of the site specific criteria are. By definition, based on some of the language used, and the fact that site-specific criteria are defined in all instances as less stringent or less protective than the biologically-based criteria, this appears to be intended as a surrogate for the Use Attainability Analysis (UAA) process. However, the rule neither includes all of the elements of a UAA, as required by 40 C.F.R. § 131.10(g)-(j), nor does it directly cite to the UAA process. It merely states that the Department is entitled to develop site specific criteria using the bases listed and any others it may desire. This is inconsistent with federal regulations on adoption of criteria, developing site-specific criteria pursuant to a UAA, antidegradation, and antibacksliding. 40 C.F.R. §§ 131.6; 131.10; 131.11, 131.12. As a narrative criterion it fails to

meet the legal requirement to protect the designated uses. 40 C.F.R. §§ 131.16(c); 131.11(a). It contains none of the restrictions required on developing site specific criteria, such as the prohibition on removing existing uses, or setting seasonal criteria. *See, e.g.,* 40 C.F.R. §§ 131.10(f); 131.10(g); 131(h). Moreover, the ambiguity in some, if not all, of the elements makes it unclear what the intent is. There is no obvious intent for the elements to correspond to the federal requirements. For this reason, we decline to provide more detail comments on the proposed elements.

EPA Response: EPA has determined that this provision is consistent with the requirements of CWA Section 303(c) and the implementing federal regulations at 40 CFR § 131. Site-specific criteria are based on local water chemistry or biology that differs from the data upon which the otherwise applicable criteria were based. See EPA's Technical Support Document for Water-Quality-based Toxics Control, EPA, March 1991; pp. 32 (box 2-1); 34 (EPA/505/2-90-001; PB91-127415); http://www.epa.gov/npdes/pubs/owm0264.pdf. EPA believes the factors Oregon has identified for consideration when calculating a site-specific criterion are generally appropriate for development of a scientifically-defensible site-specific criterion. As provided in its rule, Oregon must submit each individual site-specific criterion to EPA so that EPA can determine if it complies with CWA Section 303(c) and the implementing federal regulations at 40 CFR § 131. Consistent with 40 CFR § 131.5 and 131.6, Oregon's regulation states that the site-specific criterion will not become the applicable criterion until EPA has approved it.

EPA's approval does not violate antidegradation requirements (See comment responses in Section 2.2 (Antidegradation)). EPA also responded to a similar comment on antibacksliding in its response to comments on antidegradation. Finally, Oregon's requirement to protect existing uses independently applies and nothing in this provision suggests that site specific criteria trump protection of existing uses.

Comment: Comment regarding (c): DEQ may consider the thermal benefit of increased flow when calculating the site-specific criteria.
This statement fails to take into consideration a number of important issues that relate directly to beneficial use support. First, flow considerations may need to be set based on other issues, such as increasing the speed of out migrations or providing for sufficient flows in fall spawning seasons. Both flow considerations and temperature impacts must be balanced, limiting DEQ's discretion to consider just the thermal benefits of increasing flows. Second, the thermal benefits for one season may cause harms in other seasons, including both thermal loading harms as well as flow-related ones. At a minimum, these two considerations should be factored into this provision.

EPA Response: See previous EPA response. EPA also notes that in OAR 340-041-0028(13)(b), Oregon's rule states that it is not limiting itself to consideration of only those factors listed in that section when calculating site-specific criteria. Likewise, in EPA's review of individual site-specific criteria, EPA will consider any factors relevant to the criteria's protectiveness of the designated use, pursuant to 40 CFR 131.5(a)(2).

Comment: Comment regarding (d): Once established and approved by EPA, the site-specific criteria will be the applicable criteria for the water bodies affected, and no source may warm that water(s) more than a de minimis amount above the site-specific criteria.
Since the definition of a site-specific criterion is one that cannot achieve either the biologically based criteria or superseding, and hotter, natural conditions, the site specific criterion would by definition fail to support the beneficial uses, for reasons related to changes made by humans.

Therefore, it is not only contrary to federal law to provide for an increment of anthropogenic warming in addition to those site-specific criteria, it is nonsensical.

EPA Response: A site-specific criterion is based on site-specific information that affects toxicity rather than the general information used to derive the national or regional criterion, usually by taking into account the species composition, sensitivity and/or water quality characteristics at the site. National and regional criteria for aquatic life may be under- or over-protective if: (1) the species at the site are more or less sensitive than those included in the national/regional criteria data set, or (2) physical and/or chemical characteristics of the site (such as hardness of water or pH) alter the impact of the pollutant on the species. See WQS Handbook chapter 3.7; Technical Support Document for Water-based Toxics Control, March 1991, EPA, March 1991; pp. 32 (box 2-1); 34 (EPA/505/2-90-001; PB91-127415); http://www.epa.gov/npdes/pubs/owm0264.pdf. By sensitivity, EPA means that it recognized a species might have adapted to a certain pollutant on a local basis or to a greater extent than the test organisms upon which the general criteria are based.

Oregon's natural conditions provision for temperature applies to situations that are different from those where the site specific temperature criteria provision would apply. Site specific criteria establish another alternative to the numeric criteria; both provisions result in temperature criteria that fully support the designated use(s). Oregon intends to develop site specific criteria when it documents situations where an alternative, numeric biologically-based temperature is justified by the unique characteristics and conditions (apart from *naturally* warmer temperatures) of a particular water body. With regard to the allowance for a de minimis warming above the site-specific criteria, see EPA's response to comments under Section 2.9 (Air Temperature Exclusion).

2.11 MIXING ZONE - THERMAL PLUME LIMITATIONS [OAR 340-041-0053]

Action: EPA approves Oregon's thermal plume limitation provision, OAR 340-041-0053(2)(d), as consistent with the Clean Water Act and its implementing regulations at 40 C.F.R. § 131.5, 131.5, 131.6 and 131.13. EPA find this provision consistent with the CWA and CFR for reasons discussed in the preamble to EPA's proposed Oregon water quality standards, as well as the Temperature Guidance, to include in water quality standards thermal plume limitations to protect salmonids near the vicinity of point source discharges. The thermal plume recommendation in the EPA Temperature Guidance, which is identical to Oregon's provision, was intended to minimize or possibly avoid the potential adverse effects associated with thermal plumes.

EPA is not taking action on all of OAR 340–041-0053'; it is only taking action on the provisions within OAR 340-41-0053 which are new or revised. ODEQ also made minor wording changes to Sections (2)(a) and (2)(b) and 2(b)(B) of OAR 340-041-0053. EPA is approving this revised language because the Agency views them as not substantively different from the previous language.

Responses to Significant Comments:

Comment: The rule language precludes the Department from finding that no mixing zone can be allowed ("Mixing zones will be established"). Allowing mixing zones in all circumstances, and failing to preclude them in water quality limited waters, is contrary to law. In waters where there

is already impairment, no further impairment can be allowed, yet the proposed rule not only allows mixing zones which, be definition, increase impairment by additional thermal loading and by making a portion of a waterbody a higher risk area, but the rule calls for "minimiz[ing] the risk." This minimization process is left entirely to the discretion of Department staff and therefore fails to provide sufficient assurance that this provision of the standards will adequately protect the beneficial uses, including threatened and endangered species.

Proposed OAR 340-41-0053(2)(d) also does not meet the minimum requirements of the Clean Water Act. First, as with the standard mixing zone rule, the temperature mixing zone rule only requires permit writers to minimize risk to salmonids from listed adverse effects. The Clean Water Act requires more. Water quality standards must protect designated and existing uses, and the finding that such protection is afforded must be based on a sound scientific rationale. Minimizing risk is not the applicable standard.

EPA Response: OAR 340-41-0053(2)(d) does not mandate mixing zones. OAR 340-41-0053 (1) and (2), which are unchanged provisions and which provide context to (2)(d), indicate "The Department may allow..." mixing zones "...provided that the following conditions are met." This language makes it clear that mixing zones are at the discretion of the ODEQ and subject to certain conditions, including (2)(d).

As a regulatory matter, EPA's regulations require that criteria protect the designated use. EPA interprets its regulations to allow limited zones of impact in the waterbody if the designated use of the waterbody overall is met, and acute effects or lethality are prevented in the mixing zone (EPA's Technical Support Document for Water-Quality-based Toxics Control p. 70; FR at 36788). In Oregon's regulations, the thermal plume provisions are tied to the human use allowance provision (OAR 340-041-0028(12)(b))and therefore no impact zone can result in more than 0.3˚C total increase above the applicable criterion or 0.075˚C above the applicable criterion for any one discharger in the waterbody. As explained in Section 2.8 (Human Use Allowance) of this document, EPA views this level of impact to be insignificant and will not undermine the protection of designated uses. The thermal plume provisions provides appropriate limitations on heat discharges within the impact or mixing zone to prevent lethality and thermal shock based on the data EPA has in the record concerning these effects. See Temperature Guidance (p. 33). For the reasons described in EPA Temperature Guidance (p. 42) and in the preamble to EPA's proposed Oregon water quality standards, EPA believes water quality standards that allow an impact zone for temperature in impaired water are appropriate and will not undermine the protection of designated uses with the appropriate limitations.

OAR 340-41-0053(2)(d) provides appropriate limitations to temperature mixing and impact zones. EPA agrees that Oregon's proposed rule for these limitations were too opened ended and left too much discretion to permit writers. The final OAR 340-41-0053(2)(d) provisions set firm benchmarks to avoid or minimize the adverse effects that may be associated with thermal plumes.

Comment: We disagree that exposure to 32.0ºC can be allowed for two or more seconds. While fish may die within that period, the standard should not be to preclude them dying but to prevent any even remote possibility of lethality or acute impairment. Therefore, two minutes is an excessive potential exposure.

The standard allows for a source to minimize the "potential for thermal shock," at the same time conceding that it has no idea of what time exposure to a temperature that exceeds 25.0ºC

constitutes thermal shock ("The Department may also develop exposure timing restrictions to prevent thermal shock"). The limitation of temperatures that exceed 25.0ºC to five percent of the cross section of the water body is clearly an arbitrary figure. It does not even restrict the increase to a particular portion of the cross section that could be said to not be in use by the beneficial uses. This provision does not actually address the issue of thermal shock. Specifying a constant temperature, and not including a limitation on the degree of change allowed, does not address thermal shock which is related to a magnitude of change in temperature that cause impaired physiological functioning or impaired behavior. Thermal shock must be avoided at all flow conditions and ambient temperatures, not just those specified in the proposed rule.

EPA Response: A study by Snyder and Blahm, 1971 (as cited in the Temperature Guidance) indicates that LC50 lethality occurs when certain salmon are exposed to 32°C temperature for 8-10 seconds when acclimated to 10-15°C temperatures. Oregon's rule, which is consistent with EPA's Temperature Guidance recommendation, limits exposure to 32°C temperatures to 2 seconds. Limiting potential exposure to 2 seconds provides a margin of safety to prevent instantaneous lethality. To comply with this provision in Oregon's rule, the thermal plume of a point source discharge must be at or below 32°C after two seconds of plume travel time from the point of discharge. Two seconds of plume travel is typically less than 10 feet from the point of discharge (i.e., with an average plume velocity of 5ft/sec for the first 2 seconds). Thus, the physical area in the river that could have temperatures above 32°C would be very small. In addition, it is unlikely for fish to be entrained into the plume in the few feet from a diffusor port because the high velocity of the plume jet would not allow fish to enter into the plume jet (i.e., the fish would be deflected). Considering all of these factors, EPA determined that the 32°C limitation in Oregon's rule will prevent salmonid lethality from short term exposures to high temperature in the immediate vicinity of point source discharges. See EPA Temperature Guidance (pp 33).

A study by Coutant, 1973 (as cited in the Temperature Guidance) shows that certain salmon experience increased predation due to thermal shock when exposed to 26°C temperatures for about 30 minutes when acclimated to 15°C temperatures. Oregon's rule, which is consistent with the Temperature Guidance recommendation, limits exposure to 25°C to no more than 5% of the cross-sectional area of the river. In EPA's judgment, salmonids will not be entrained in the small portion of water in the river that is allowed to exceed 25°C for a long enough duration to experience increased predation from thermal shock. Some fish swimming upstream or downstream may enter into the small zone in the river that is 25°C ±1° (e.g., a portion of the river that has a volume of about 5% of the river volume over a 10 foot river reach), but the time of exposure to this zone will likely be only a few minutes or less. Further, studies indicate fish generally will avoid warmer waters, thus they will avoid the warm portion of the river. However, if a fish becomes entrained due to riding with the current, the entrainment in the warm parcel will be of short duration. After considering all of these factors, EPA has determined that the 25°C limitation in Oregon's rule will generally prevent thermal shock. See EPA Temperature Guidance (pp 33). For additional information, also see EPA's Technical Support Document for Water-Quality-based Toxics Control, EPA, March 1991; pp. 32 (box 2-1); 34 (EPA/505/2-90-001; PB91-127415); http://www.epa.gov/npdes/pubs/owm0264.pdf.

2.12 WATER QUALITY VARIANCES [OAR 340-041-0061(2)]

Action: EPA approves this provision as consistent with the Clean Water Act and its implementing regulations at 40 CFR § 131, with special emphasis for those requirements found

at 40 CFR §131.10(g); 131.13, and 131.20. See also Section 5.3 of the Water Quality Standards Handbook, Second Edition and 63 Fed. Reg. 36742, 36758-36760 (July 7, 1998). Oregon's factors for allowing a variance, along with Oregon's provisions protecting existing uses, are almost exactly the same as EPA's factors listed at 40 C.F.R. § 131.10(g). Further, in approving any variance submitted to EPA, EPA would be governed by its rules at 40 C.F.R. § 131.10(g).

EPA's requirements for variance procedures involve the same substantive and procedural requirements as removal of a CWA Section 101(a)(2) use. A use attainability analysis is an analysis which demonstrates the attainable uses of a water body and documents the appropriate 40 CFR § 131.10(g) bases for allowing that a change of use (and associated criteria) is required. 40 CFR § 131.3(g).

2.13 OREGON'S SALMONID USE DESIGNATIONS [OAR 340-041-0101 TO OAR 340-041-0340]

Action: EPA approves the uses identified below (as well as in the accompanying maps[7]) for the designation of salmonid uses, including when and where these uses occur, as complying with section 303(c) of the Clean Water Act and its implementing regulations at 40 C.F.R. § 131.10(a) through (c). In establishing uses, states must designate appropriate uses for protection. The CWA has put the state in the primary role to develop such use designations. A state is free to make the necessary policy choices when it develops uses, or subcategories of uses, as long as these meet the minimum requirements of the CWA and EPA's implementing regulations at 40 C.F.R. § 131.10. While the CWA gives EPA an important role in determining appropriate minimum levels of protection and providing national oversight, it also gives considerable flexibility and discretion to states to design their own programs and establish levels of protection above the national minimum. (63 FR 36745). The minimum level of uses are those which are identified in the CWA section 101(a) and reflected in EPA's regulations at 40 C.F.R. § 131.5(a)(1) and § 131.6(a), including designating waters for the protection and propagation of fish.

Furthermore, the regulations developed by EPA at 40 C.F.R. § 131.10 (c) provide states with the option of refining their use designation process by allowing them to establish subcategories of uses, such as cold water and warm water aquatic life, or as in the case of Oregon, salmonid rearing, spawning, and migration. (63 FR 36746; WQS Handbook p. 2-5). States are required to designate uses considering, at a minimum, those uses identified in sections 101(a)(2) and 303(c). However, there is flexibility inherent in the state process for designating uses which allows the development of subcategories of uses within the general categories of the Act. The regulations

[7]The following tables and maps also include designated uses for cool-water species which were unchanged, and therefore are not being acted on.
Tables 101A and B (Mainstem Columbia River)
Tables 140A and B (Goose and Summer Lakes Basin)
Tables 190 A and B (Malheur Lake Basin)
Tables 250A and B (Owyhee)
Figure 340A (Willamette)
Figure 180A (Klamath)
Figure 201A (Malheur)

allow the state some flexibility in reaching conclusions on the uses that appropriately reflect the potential for a waterbody, attainability of those goals, and the consequences of designations. (63 FR 36749). Appropriate application of this process of use designation involves a balance of environmental, scientific, technical and economic and social considerations as well as public opinion. This approach preserves states' primary role in establishing water quality standards in weighing any available evidence regarding the attainable uses (CWA § 101(b)).

Oregon's standards for temperature and intergravel dissolved oxygen, which are specifically designed to protect salmonids, apply where salmonid uses are designated. The State of Oregon has provided maps and tables in its water quality standards to identify where and when it has designated salmonid uses in each of the State's 20 basins

For each basin, the State has made the following beneficial use designations:

1. where and when the salmon and steelhead spawning to fry emergence use occurs,
2. where core cold water habitat use occurs,
3. where salmon and trout rearing and migration use occurs,
4. where migration use occurs,
5. where and when Lahontan cutthroat spawning and rearing use occurs,
6. where redband trout use occurs, and finally,
7. where bull trout spawning and juvenile rearing use occurs. In addition, Oregon has identified where and when the application of a bull trout spawning criterion would apply where spawning occurs immediately downstream of reservoirs.

The key to protecting a particular species is to protect sufficient habitat for each life stage and the ability to reproduce to create the next year class. Oregon's time and place use designations and accompanying criteria accomplish this. An examination of the maps showing each use demonstrates that for each basin in Oregon, the State has designated uses that support each of the important life stages (e.g. spawning, rearing, migration). EPA recognizes that some scientific judgment must be made in "drawing lines" in each waterbody where one use ends and one begins, (*e.g.*, where the use associated with the 16°C criterion ends and the use where the 18°C criterion begins) but the State, EPA, and the Services believe that based on the best available information about the species life stage distributions in Oregon's waters, the State designated its uses in such a way that it will fully protect each life stage and when viewed as a whole will support healthy sustainable salmonid populations.

EPA's evaluation determined that Oregon's designated subcategories protect all salmonid uses. The use designations are extensive enough to cover the range of salmonid species and they accurately reflect the timing of the different life stages of salmonid use in these subbasins. Specifically, EPA evaluated the accuracy of the distribution and timing information used by the State, and reviewed the process used to take the distribution and timing data and convert it into designated uses. Furthermore, Oregon's framework for designating use subcategories is consistent with the approach recommended by EPA in its Temperature Guidance document. (See 68 FR 58762, Oct. 10, 2003) for a discussion of the development of the Temperature Guidance.)

Factual Bases For Designations

ODEQ worked together with an interagency team to delineate salmonid use designations for the waters of the State of Oregon and to develop maps and tables showing the applicable fish uses for each basin. The agencies that participated in this effort include the US Environmental Protection Agency, the US Fish and Wildlife Service, NOAA Fisheries and the Oregon

Department of Fish and Wildlife. The fish use designation maps and tables may be viewed on the ODEQ web site at http://www.deq.state.or.us/wq/standards/WQStdsTemp.htm and in Appendix A of this document.

Most of Oregon's basins have two maps to represent fish uses, one for uses that occur throughout the year, including the warmest period (July and August), and a second for salmon and steelhead spawning use (spawning through fry emergence). Water quality criteria apply for the uses shown on the "Fish Use Designation" maps year round except when a more stringent spawning criterion applies. The spawning criteria apply to the reaches and date ranges shown on the "Salmon & Steelhead Spawning Use Designation" maps. In many cases, more than one fish use occurs in the same water body. In this case, the use designation is based on the most sensitive species or life stage. The criteria applied to the most sensitive use will also protect the less sensitive uses present.

ODEQ primarily relied on the Oregon Department of Fish and Wildlife (ODFW) for information on fish distribution and life stage timing. This information can be viewed on the internet at http://osu.orst.edu/dept/nrimp/information/fishdistdata.htm. The ODFW methodology for developing their database is described in the *1:24K Fish Habitat Distribution Development Project Procedures Manual* (Oregon Department of Fish and Wildlife, February 26, 2002). The database is the product of a multi-year effort by ODFW to develop consistent and comprehensive fish distribution data for a number of salmonid species. This database has recently been completed for all basins or sub-basins in Oregon that have anadromous fish. The distribution data represent known fish use based on documented observations, as well as the best professional judgment of local field biologists' as to where use is likely to occur based on suitable habitat (i.e., waters near areas of documented life stage presence on the same water body that have similar habitat features, such as flow volume, gradient, gravel size, and pool frequency, and no known obstructions or reasons why the use would not also be present in these waters). ODFW compiled and reviewed fish distribution information from a variety of sources, including state and federal fisheries agencies, federal land management agencies, tribal entities, watershed councils and other interested public or private organizations. The ODFW fish distribution data reflect areas of fish use based on information collected over the past five life cycles for a particular species, which ranges from 15 to 35 years. In addition to spatial fish distribution data that describe where a life stage use is known or likely to occur, the ODFW database also includes information describing when a life stage use is known or likely to occur. An additional discussion of the methodology used by the State of Oregon in developing these use designations and also utilized by EPA in developing its proposed rule for the State of Oregon is in EPA's Proposed Rule for Water Quality Standards for the State of Oregon at 68 FR 58757, 58765, Oct. 10, 2003.

In addition to the ODFW information, ODEQ also relied upon the following sources of information to identify the proposed salmonid designated uses, respond to public comment and revise the proposed rules:

1. *Bull Trout Habitat Designation Report: Technical Work Group Recommendations* (ODEQ 2003);
2. USFWS proposed critical habitat for bull trout spawning and juvenile rearing (67 FR 71236, November 29, 2002);
3. Salmon Anchor Habitat Strategy for the Tillamook and Clatsop State Forests (Dewberry 2003);
4. Ecotrust Salmon Anchor Habitat in the Siuslaw River sub-basin (Ecotrust 2000); and
5. Temperature data (ODEQ database - Laboratory Analytical Storage and Retrieval Database List of WQ Monitoring Stations for Temperature in http://www.deq.state.or.us/wq/lasar/StationListParam.asp?ParameterKey-2224)

An ODEQ Technical Workgroup on Bull Trout was assembled specifically for the purpose of identifying current and potential bull trout habitat needed to allow for survival and recovery of current populations of bull trout in Oregon. This workgroup met for over one year and included bull trout experts from various agencies and organizations around the State. They identified current and potential year round bull trout use and current and potential bull trout migration. The workgroup also provided some estimates of migration timing.

EPA believes Oregon's use of the above listed information sources is appropriate and these are the best available, scientifically sound, sources of fish distribution information with which to base salmonid use designations. The databases took a conservative approach (*i.e.*, inclusive) in that they are based on fish presence information spanning multiple years and include waters where fish are likely to occur based on locations near areas with documented life stage presence and suitable habitat. The use of both data and professional judgment is appropriate because of the practical limitations of monitoring every stream mile, and because fish distributions vary from year to year for any given water body. This conservative approach is appropriate because salmonid use designations based solely on areas of documented presence does not sufficiently describe the actual use waters due to the practical limitations of monitoring every stream mile, and routine fish monitoring sometimes indicates no fish presence when fish are actually present (i.e., false negatives). Further, fish distributions vary year to year for any given waterbody, so salmonid use designations should be based on fish presence studies over multiple years.

EPA has determined the decision rules that Oregon developed to convert the ODFW database and the other data reports identified above into salmonid use designations are reasonable and based on sound rationale. (Discussion of the decision rules are provided under each use designation below.)

Methodology For Designating Uses

The following is a summary of the methods used to delineate the fish use designations based on the information sources described above. This methodology was agreed upon by ODEQ, EPA, U.S. Fish and Wildlife Service and NOAA fisheries during the interagency team process described above to establish the fish use maps and tables. This methodology is consistent with the methodology for designating fish uses in EPA's Temperature Guidance and is summarized by ODEQ in Attachment H to its rulemaking submission to the Oregon Environmental Quality Commission (EQC).

Salmon and Steelhead Spawning Through Emergence Use

ODEQ considered identifying each different combination of species locations and time periods where the ODFW database shows salmon or steelhead spawning through emergence occurs. However, this resulted in over 30 different spawning date ranges for just one basin. Because this approach seemed overly complicated and difficult to implement, the interagency team considered ways to simplify the method for designating spawning use time periods and still protect the use. After reviewing the timing information for all salmon species and steelhead, the interagency team agreed on the approach described below.

1. In waters designated for salmon and trout rearing use during the summer months:

    a. Spawning through emergence use applies from October 15 through May 15 to reaches with fall spawners (Chinook, coho or chum), or a combination of fall and spring (steelhead) spawners.

    b. Spawning through emergence use applies from January 1 to May 15 to reaches that have only steelhead spawning use.

2. In waters designated as core cold-water habitats, spawning may begin earlier and/or emergence may end later. The above spawning through emergence dates apply unless they are extended as follows:

    a. Spawning use for Chinook salmon begins 2 weeks after the earliest spawning date in the timing unit for that species according to the ODFW timing tables, but no later than October 15. If the initial spawning date is identified as "peak use," there is no 2 week delay.

    b. Emergence use for steelhead spawning reaches ends June 15.

3. In waters designated as migration corridors, the best available site specific information will be used to determine dates of spawning use. This occurs in only 2 locations.

    a. In the Columbia River mainstem, chum salmon spawning use dates are based on site specific information available from ODFW.

    b. In the Snake River mainstem below Hell's Canyon dam, fall Chinook spawning use dates are based on site specific information assembled during the development of the temperature TMDL.

The rationale for the two week delay after the spawning start date in 2a above is that the date shown in the ODFW timing tables applies to a "timing unit," which in many cases is fairly large. The spawning criterion will apply throughout the designated reach on the date this use begins, yet it is most likely that the earliest spawning begins in cooler upstream waters, tributaries, or springs. Also, the first 2 weeks of spawning is often identified as "lesser use" by ODFW, meaning a few fish are beginning to spawn at this time, or perhaps in some years, but the bulk of them spawn during the "peak use" time.

The later emergence end date for steelhead in 2b above is used because in these colder waters, steelhead spawning and emergence typically occurs later. Although steelhead fry may emerge

even later than June 15 in some waters, those waters are typically a colder upstream (i.e., high elevation) portion of where this use is designated, or in cold spring waters. In order to attain the spawning criterion [i.e., 13°C (55°F)] on June 15 in the downstream extent of spawning reaches, temperatures would remain colder in the upstream waters and therefore would not likely reach 13°C (55°F) until later in the year.

The reasons for using site specific timing information for spawning through emergence in the migration corridors as described in 3 above, is that there are a limited number of spawning reaches in these larger mainstem rivers, they are shorter segments (thus no need for the 2 week delay for upstream/downstream variability), they each have spawning by only a single species, and there is more site specific timing information available.

Core Cold-Water Habitat Use
Core cold-water habitat designations identify and ensure the protection of colder water habitats that provide optimal conditions for salmon and steelhead juvenile rearing and that protect summer bull trout sub-adult and adult foraging and migration. In addition, these areas would provide colder holding waters for pre-spawning adults.

The following indicators were used to identify where these colder water habitats occur or are likely to occur:

1. Waters where spring Chinook spawn during the late summer months (August 1 through September 15).

2. Waters having sub-adult and adult bull trout use where available timing data indicate that use occurs during July or August.

3. Waters identified as "anchor habitat" in Ecotrust (2000). These studies collected data on juvenile rearing density and identified areas of core juvenile rearing habitat for coho salmon, steelhead trout, and Chinook salmon. ODEQ designated stream segments as core cold-water habitat in the North Coast Basin (an upper portion of the Necanicum River, Ecola Creek and Plympton Creek) and Mid-Coast Basin (Siuslaw River) based on this data.

4. Waters upstream of the areas identified in 1 through 3 that also support salmon and steelhead rearing or provide cold water to these areas.

5. Waters where water temperature data that meets ODEQ's data quality requirements indicate that current 7-day average maximum stream temperature for the warmest week of the year stays below 16°C (61°F).

Salmon and Trout Juvenile Rearing and Migration Use
ODEQ designated "Salmon and Trout Rearing and Migration Use" for waters where:

1. salmon or steelhead rearing occurs in July or August;

2. rainbow or coastal cutthroat trout rearing occurs; and

3. all waters upstream of the waters identified above.

The data and information supporting these determinations is contained in the ODFW database on the distribution and life stage timing of salmonid fishes described previously. This use designation is also intended to protect for upstream migration of adult salmon and steelhead.

Salmon and Steelhead Migration Corridor Use
ODEQ designated waters as "salmon and trout migration corridors" where ODFW distribution and timing information indicates there is migration use but no rearing use in July or August or information suggests a lower mainstem river is primarily a migration corridor during the period of summer maximum temperatures, and there is some evidence to suggest that temperatures would naturally reach 20°C/68°F. ODEQ designated the migration corridor use for the following reaches:

1. Lower Willamette River (from the mouth to river mile 50),
2. Lower John Day River (from the mouth to the confluence with the North Fork John Day River),
3. Columbia River mainstem from the mouth to the Washington-Oregon border,
4. Snake River from the Washington-Oregon border to Hells Canyon Dam, and
5. Three small reaches of the lower Coos River.

Lahontan Cutthroat and Redband Trout Use
These two trout species are found in eastern Oregon. ODFW has not updated their distribution database in this part of the State or collected life stage timing data for interior basins that do not have anadromous fish, so ODEQ had to rely on other sources of information to estimate the distribution of these species. Lahontan cutthroat trout are limited to the Upper Quinn and Alvord Lakes basins in southeastern Oregon (USFWS 1995a; Dunham 1999).

Bull Trout Juvenile Rearing and Spawning Use
The bull trout juvenile rearing and spawning use was designated based on ODEQ's *Bull Trout Habitat Designation Report: Technical Work Group Recommendations* (2003b) and USFWS' proposed critical habitat for bull trout juvenile rearing and spawning (*Elizabeth Materna* memorandum and addendum; *Mt. Hood Recovery Plan*). ODEQ believes it is necessary and appropriate to designate areas identified as both potential bull trout rearing and spawning habitat (identified in both of the above reports) and where current use occurs because bull trout habitat in the State has been greatly reduced and fragmented and bull trout are listed under the federal ESA. The additional habitat will allow local populations to grow to the point where they:

(1) are reconnected with other local populations and with foraging habitats;
(2) are large enough to withstand losses due to natural stresses and events (e.g., drought); and
(3) maintain the genetic diversity to support a viable population.

ODEQ designated bull trout rearing and spawning use for:

(a) waters classified in ODEQ's report as known bull trout spawning and juvenile rearing habitat (BTHD1) or potential bull trout spawning and juvenile rearing habitat necessary for long-term health and viability of bull trout populations (BTHD3),

(b) any additional waters identified by the USFWS as proposed bull trout spawning and rearing critical habitat, and

(c) waters upstream of these habitats that support the bull trout use by providing cold water to the areas where bull trout use occurs.

Responses to Significant Comments:

Comment: Why is the use of the ODFW database as the only basis for use designations?

EPA Response: The ODFW database is the most comprehensive database on fish in Oregon and is based on the best available data. Although it is the primary source for much of the data on uses, it is not the only information that was used. See above for a detailed discussion on Factual Bases for Designations.

Comment: Use designations based on current geographic and temporal ranges and are not sufficient to meet recovery goals of threatened or endangered species for which the limited habitat range is the primary reason for the species' tenuous status. Further, the use designations do not protect existing uses.

EPA Response: The CWA gives states broad discretion as to how to establish uses as long as these meet the requirements of CWA section 303(c) and EPA's implementing regulations at 40 C.F.R. 131.10. The CWA nor the ESA does not compel states to establish designated uses to meet recovery goals under the ESA. However, EPA believes Oregon's framework of uses and criteria to protect those uses for salmonids will significantly aid in the recovery of threatened and endangered salmonid species.

Oregon's use designations and criteria are consistent with EPA's proposed Oregon water quality standards, as well as the recommendation's in EPA's Temperature Guidance. EPA's Temperature Guidance recommendations are designed to meet both the requirements of the CWA and the ESA and support healthy sustainable populations of salmonids. Currently, most of Oregon's rivers do not attain Oregon's newly adopted criteria.
Oregon's 303(d) list included 1,087 waterbody segments as impaired for temperature (Note: this list is based on the previous criteria, but EPA expects future lists to be similar). Attaining the newly adopted criteria will substantially increase the range of suitable thermal habitat for salmonids and prevent adverse effects from high temperature that occur today, thereby aiding in the recovery of healthy salmonid populations.

As described above in the use designation methodology, Oregon's salmonid use designations provide broader protection that just protecting current or existing uses. For example,

- The bull trout use designation is based in part on USFWS proposed critical habitat, which includes waters where no use is known to occur today but is considered necessary bull trout habitat to support a healthy population.

- The core cold water habitat use, which was based on indicators of potential cold water habitat as described above, greatly expands the spatial extent of cold water habitat that exists today. Currently, these indicator life stages (e.g. late summer chinook spawning, summer adult bull trout) occur in these waters in low density due in part to elevated temperatures, but the fact that they do occur is an indicator that these waters have the potential to fully support the cold water habitat use. This can best be understood by examining how Oregon's core cold water habitat use designation supports core salmon and steelhead juvenile rearing. Currently,

waters that support thermally optimal juvenile salmon and trout rearing are primarily limited to the higher elevation mountain streams. Oregon's core cold water habitat use designation includes waters downstream from these mountain streams that currently only have limited juvenile rearing due, in part, to high water temperatures. Thus, the core cold water habitat use designation expands the current range of waters that will support optimal temperature for juvenile rearing if the criteria is attained, and in the judgment of EPA, NOAA Fisheries, and USFWS will be sufficient to support sustainable populations of salmon and steelhead.

- The salmon and trout migration and rearing use basically covers all the waters in Oregon that can be accessed by salmon and steelhead that do not have one of the other salmonid uses. Thus, this use is quite extensive and includes waters where this use is very limited today.

- The salmon and steelhead through fry emergence use was based on ODFW data on spawning habitat, which includes areas on known spawning as well areas likely to support spawning.

Comment: The Department has provided no methodology for the public or agencies commenting on the proposed rule to understand the rationale for the choices embodied in the maps and tables that show when and where it intends to protect the designated beneficial uses.

EPA Response: See Section 3 (General Public Comments) of this document for a response to the issue of sufficient public participation.

Comment: DEQ's general listing of beneficial uses and specifically 'fish uses' requires more detail. Specifically, in listing fish uses, DEQ lumps together all salmon and steelhead when establishing fry emergence and spawning dates. For what species, specifically, is DEQ setting the fry emergence and spawning dates?

EPA Response: The salmon and steelhead use designation covers all the salmon species (i.e., chinook, coho, chum) and steelhead. So, whereever and whenever one of these species spawns, the State designated this use with the methodology described previously.

Comment: DEQ's reordering of the standards makes the standards difficult to follow and compare with the existing standards. Under the existing standards, criteria that apply to all basins are listed in Table 20, in an easily understandable format that clearly applies to all basins. Under the proposed standards, some criteria that appear to be common to all basins are listed generally, and only basin-specific criteria are listed under each basin. This organization is confusing and presents several questions. First, is it true that the criteria that are listed independent of the basins apply to all the basins? Second, if general criteria are listed and basin-specific criteria are also listed, do the basin-specific criteria supersede the general criteria? If so, where is this indicated in the proposed rules?

EPA Response: Oregon's reorganization of its tables was to help clarify the designated uses in light of the State's designation of the suite of salmonid use subcategories recommended in EPA's Temperature Guidance. The general scheme is not significantly different from the previous rule. As to Table 20, this is a table of toxic criteria that has not been modified from the previous rule. It identifies criteria for aquatic and human health which apply to all basins where

the specific relevant use is designated. Table 21, identifies criteria for specific uses for DO and IGDO and again applies to all basins wherever the specific use is designated. The temperature criteria which apply to salmonid uses are identified in the rule at OAR 430-041–0028(4) and apply to all basins as delineated in the detailed "when and where" maps.

The uses designated for each basin in the State are identified in Tables 101A -Table 340. Each table identifies a general fish and aquatic life use, which in many cases also includes more detailed subcategories of salmonid uses. The details of where and when these subcategories are applied are broken out in separate tables for simple cases (e.g. Table 101B for the Columbia River). However, to coherently express the complexity of the application of "where and when" criteria apply to a suite of salmonid uses, which in some cases overlap in both time and space, both the State and EPA determined the use of color-coded basin maps was the most efficient and clearest way to show the "where and when" scheme. EPA and the State developed these maps in conjunction with the Services as part of the interagency group discussed previously. Therefore, the use tables for each basin contain a footnote to the general aquatic life and fish use which refers to either a simple table or map to further identify the salmonid subcategories.

Comment: The proposed designated fish uses differ substantially from existing designated fish and aquatic uses. DEQ may not remove designated uses from water quality standards without following the substantive and procedural requirements for water quality variances set forward in the federal regulations. 40 C.F.R. § 131.10(h). DEQ has not followed these requirements, and therefore, may not make the changes that it proposes.

The existing Oregon WQS list resident fish and aquatic life as a separate designated beneficial use from salmonid uses. The proposed revisions, however, alter these designations. Although Table 101A generally lists fish and aquatic life as beneficial uses of the Mainstem Columbia, and Table 101B clarifies the fish use designations for the river. These clarifications omit several species that were previously covered under the broad categories of anadromous fish and resident fish & aquatic life. Table 101B lists the following designated uses: salmon and steelhead migration corridors, redband or Lahontan Cutthroat Trout, Salmon and Steelhead Spawning through Fry Emergence, and Shad and Sturgeon Spawning and Rearing. Pacific Lamprey, which are anadromous fish, but neither steelhead nor salmon, are excluded from the proposed list of designated uses. Resident fish other than shad and sturgeon are also removed. There are likely other species that have been removed from the list of designated uses.

Removal of these species is illegal. Federal regulations make clear that states may not remove designated uses unless 1) a use requiring more stringent criteria is added, or (2) the uses will be attained by implementing effluent limits and best management practices. 40 C.F.R. § 121.10(h)(1&2). Even where these requirements are met, DEQ must conduct a use attainability analysis (UAA) supporting its removal of the use. This UAA must be made available to the public during the notice and comment period, prior to public hearings on the proposed WQS revisions. DEQ did not comply with these federal requirements. DEQ did not determine that more stringent criteria would support the removed uses or that these uses would be attained. Nor did DEQ prepare or make available a UAA supporting the removal of these uses. The removal is thus impermissible.

EPA Response: Oregon has not removed any use designations, but instead has articulated when and where they apply pursuant to the Court's Order in NWEA v. EPA (No 01-510 HA) Final Judgment August 13, 2003. In developing its Temperature Guidance, EPA considered that development of refined use subcategories might better protect previously general uses. EPA

encourages refinement of designated uses. See ANPRM 63 FR 36,750 (" . . . the Agency's current thinking is that there is a growing need to more precisely tailor use descriptions and criteria to match site-specific conditions ensuring that uses and criteria provide an appropriate level of protection which to the extent possible, is neither over nor under protective.") Prior to this action, the Court in *NWEA v. EPA*, 268 F.Supp.2d 1255, 1267 (D. Or. 2003), found that the previously approved use designations were inadequate because they did not have "accurate time and place designations." Thus, the establishment of these uses where they did not exist before is not a removal of a designated use.

The State of Oregon has refined its use designations consistent with the recommendations in EPA's Temperature Guidance. The State has refined its uses to more precisely define when and where the different salmonid uses occur or may potentially occur within a basin. When doing so, parts of the basin may have sub-categories of use that supplement the general use for the basin. EPA believes these use refinements are not use removals that would require a supporting use attainability analysis for two reasons. First, specific uses are not actually being removed. The State's prior designation of general uses for a basin (e.g., migration, rearing, spawning) indicated that these uses occurred at some places and times in the basin, but never defined when and where they occurred. This is why the court in *NWEA v. EPA* found the use designations insufficient**.** Thus, a use refinement to specify where and when sub-categories of uses occur or potentially occur is not removing those uses that were not yet established. Second, the interdependent suite of new salmonid uses adopted by Oregon work together to protect and support salmonid populations as a whole consistent with 101(a)(2) of the CWA and therefore a use attainability analysis is not needed as per 40 C.F.R. § 131.10(k). See EPA Temperature Guidance (p. 42).

Oregon's use tables for each basin identify a general fish and aquatic life use, which in many cases also includes more detailed subcategories of salmonid uses. While the general fish use category includes the salmonid subcategories, it also includes all other fish uses which may exist, even if they are not broken out in specific subcategories. Finally, the temperature criteria designed to protect the more sensitive salmonid use, will also protect other existing fish uses. It is therefore not true that the Pacific Lamprey or any other resident fish uses have been removed from the Columbia River designated uses. The general fish and aquatic life use applies to the whole mainstem Columbia River (see Table 101A), which includes the Pacific Lamprey and other resident fish (although not specifically identified). EPA believes that these other fish uses would be protected by the criteria intended to protect the more sensitive salmon and steelhead uses on the Columbia River.

Comment: We do not understand why the Department has limited the protection of sturgeon spawning and rearing to RM 147 to RM 203. White and Green sturgeon are present throughout the Lower Columbia River. Spawning of salmon in the Columbia River is far more widespread than that suggested by the Department's tables. In Table 101B, Chum spawning is limited to RM 141.5-143.5, yet populations have been identified in the Lower Columbia River Estuary, in the area near the Interstate 205 highway crossing on the east side of Portland, near Woods Island, as well as generally distributed throughout the river and at Grays River near the mouth of the Columbia.

EPA Response: The Sturgeon spawning and rearing use is not a rule change, as there has been no change to this use from the previous standards (found at OAR 340-41-522). Therefore, EPA is not reviewing this use designation as part of this action. EPA disagrees with the comments that Chum salmon spawning has been identified in the areas mentioned. EPA is not aware of any data that supports that assertion, and the commenter did not provide any data. ODEQ based

its salmon spawning use designation for the mainstem Columbia River on the best available information provided by ODFW.

Comment: Maps that would appear to apply also to the Mainstem Columbia demonstrate that fry emergence and spawning for certain species occur year-round. For example, the map for the Sandy Basin depicts fry emergence and spawning along Smith and Beaver Creeks and into the Columbia River from October 15 until May 15 and from Moffett Creek into the Columbia River from August 15 until May or June 15. Similarly, spawning and fry emergence in Hood River and into the Columbia River occurs from October 15 until June 15. Why, then, is such a limited segment of the main stem Columbia designated for spawning and fry emergence, and why is the time period only from October 15 until March 31? Surely DEQ does not believe that spawning at the mouth of the Hood River can be functionally separated from temperatures in the Columbia that will undeniably affect spawning salmon.

EPA Response: None of ODEQ spawning use maps show this use occurring year round in any of the waters mentioned above. The timeframe and location of the spawning use on the mainstem Columbia is for the chum salmon (see Table 101B). The timeframes and locations of the spawning use for the rivers noted above in the Sandy and Hood river basins are for other species that spawn in those rivers, not the Columbia River.

Comment: Some commenters disagreed with the placement of use designations in specific waterbodies. Other commenters encouraged EPA and/or Oregon DEQ to use different indicators of potential habitat use (e.g., indicators of historic bull trout use).

EPA Response: As discussed in the analysis of Oregon's designated uses, Oregon DEQ, working with EPA and the Services, used the best available science to determine the timing and placement of the use designations. Available site specific data was a part of the information considered by Oregon DEQ. EPA recognizes that some level of best professional judgment occurred during the process to draw specific lines around areas where designated uses occur. EPA has determined that the process and information used by Oregon DEQ will result in protection of the designated aquatic life uses. It is the intent of both Oregon and EPA that if new data is provided that demonstrates a need for revisions to Oregon's water quality standards, including the mapping of the designated uses, Oregon will revise their water quality standards. For example, as mentioned in Oregon's response to comments (See OR DEQ- Attachment B - Division 41 Revisions Response to Public Comments, November 10, 2003; http://www.deq.state.or.us/wq/standards/Temperature/TempDiv41PublicComments1.pdf), DEQ states that it realizes that updates and revisions to the fish use maps will be necessary as better data become available. Updates to the maps are considered updates to the use designations. Therefore, when the maps are revised, the public will be notified of the proposed revisions and have an opportunity to comment on the updates. In addition, the revisions will require approval by EPA in order to take effect for CWA purposes.

Comment: It is impossible to know the degree to which these migration barriers are included in the EPA use designations, which barriers were installed after 1975 and therefore constitute the removal of an existing use that cannot be the basis of the use designations, and which are being used to justify an inadequate range of core rearing or bull trout spawning habitat.

EPA Response: ODEQ generally designated all waters upstream of where the various uses occur, even if the uses are undocumented in the upstream waters. Therefore, even if there are barriers (e.g., culverts) that block upstream use, the approach that Oregon used to designate uses

generally applied the use to the upstream waters. The commenter did not provide any additional data for Oregon to consider on this matter. As discussed in previous comments, ODEQ has stated that it will update its use designations as new data demonstrate that it is necessary.

Comment: Likewise, EPA notes that it omits core rearing habitat in coastal areas because its own surrogate measure methodology depends upon chinook rearing and there is no chinook rearing there. Preamble at 34-35. As a consequence, the use designations fail to adequately protect steelhead and coho at the core rearing criterion. Personal Communication with John Palmer, EPA, October 31, 2003.

EPA Response: As discussed in the Biological Evaluation (EPA, Feb. 2004), Oregon considered the needs of steelhead and coho in coastal areas.

> **"South Coast Basin -** A few river systems in this basin lacked core cold water habitat use designation, which would provide 16°C (60.8°F) waters to support optimal habitat for salmon and steelhead juvenile rearing. This was the only basin that did not have a significant portion of the salmon or steelhead ESUs designated as cold water habitat. Oregon with the interagency team looked at temperature data and other sources of data to see if there were other means of identifying this use, but there was none available. However, Oregon with the interagency team believed that the colder water that would exist in the upstream portion of the waters designated rearing and migration [18°C (64.4°F)], and the protection of existing cold water provided by Oregon's Cold Water Narrative Criterion, there would more than likely be waters providing 16°C (60.8°F) or colder temperatures to support the coho ESU in this basin."

EPA, Oregon DEQ, and the Services hope to address the lack of data in these areas through conservation measures proposed in the Biological Evaluation (EPA, Feb. 2004) and confirmed in the Biological Opinion. The interagency team will work to design a temperature monitoring plan that will identify waters that are colder than the criteria in selected basins with distinct populations of ESA-listed coho, steelhead, and bull trout.

Comment: Specifically, EPA does not address the question of whether its use designations have provided migration corridors to connect remaining populations of bull trout with each other and with any existing uses of bull trout that have been locally extirpated since 1975. EPA makes no reference to whether it has used all or some of the BTHD4 habitat identified by the Oregon committee as "necessary for long-term health and viability that is not known to currently be occupied but has potential to be used for life stages of migration by sub-adults or adults" on a seasonal basis. Bull Trout Work Group at 6.

EPA Response: As discussed above, the bull trout spawning and rearing use includes waters necessary to support a viable population. Further, the cold water habitat use provides adequate protection to support summer adult and sub-adult bull trout use. It should be noted the FWS proposed critical habitat for bull trout migration and rearing and as well as the Oregon workgroup potential bull trout migration waters (BTHD4) included waters that adult bull trout use or may potentially use during the non-summer period. These waters do not need to be protected vis-a-vis the 12C or 16C summer maximum 7DADM criteria.

Comment: NWEAs also criticizes the absence of a Bull Trout Spawning use designation and the absence of a steelhead smoltification use designation.

EPA Response: Oregon DEQ and the interagency team did consider separate use designations for bull trout spawning and steelhead smoltification, but determined that those uses could be protected by the temperature criteria associated with other salmonid uses adopted by Oregon. For bull trout spawning, EPA has determined that Oregon's bull trout rearing and spawning use will be protective. Additionally, EPA has determined that Oregon's salmon and steelhead spawning through fry emergence use will protect steelhead smoltification.

As discussed in the Biological Evaluation (EPA, Feb. 2004), Oregon DEQ and the interagency team determined that a single temperature criterion would be adequate in most instances to protect both bull trout rearing and spawning. EPA's Temperature Guidance (EPA 2003) recommends a temperature of 9°C (48°F) to protect bull trout spawning. However, because bull trout generally spawn in the late summer and fall in the same waters where young and resident juvenile bull trout rear, EPA indicated in its Temperature Guidance (EPA 2003) that it may be appropriate to protect a combined bull trout spawning and rearing use with a single numeric temperature criterion [12°C (54°F)] that limits summer maximum temperatures. EPA has concluded it is protective to do this in Oregon because best professional judgement based on the thermal temperature patterns in Oregon bull trout waters indicates that if the summer maximum temperature is 12°C (54°F), temperatures will naturally decrease to levels that are protective of bull trout spawning [9°C (48°F)] when it occurs in the late summer and fall, and further decrease to protect egg incubation [2 to 6°C (36 to 43°F)] when it occurs over the winter. Additionally, there may be some areas where bull trout spawn in the summer, but in those situations, the existing summer maximum temperatures are likely to be colder than 12°C (54°F) and in those situations the protection of existing cold water provisions (discussed in Section 5.6.2 of the Biological Evaluation (EPA, Feb. 2004)) would apply.

The 12°C (54°F) 7DADM criterion alone may not protect spawning in four waterbodies downstream of reservoirs. In these waters, dams delay the natural seasonal cooling of waters in the fall to an extent that may prevent waters from cooling to 9°C (48°F) downstream at times of the year when bull trout spawning occurs. The four locations are segments immediately downstream of Laurence Lake Reservoir (Hood River Basin on the Middle Fork of the Hood River); Melhorne Reservoir and Clear Creek Reservoirs (Pine Creek Sub-Basin of Powder Basin); and Carmen Reservoir (behind Carmen dam in the Willamette Basin, on the McKenzie River above Blue River). For this reason, Oregon adopted the above temperature increase limitations at these reservoirs criterion specifically to protect bull trout spawning and egg incubation at these reservoirs.

Salmon and steelhead smoltification occurs in the spring as these fish migrate to the ocean and go through the adaptation process for saltwater. Steelhead are believed to be the most temperature-sensitive salmonids during smoltification, which is why a separate designated use and criterion of 14°C/57°F was recommended in the Temperature Guidance. EPA believes that Oregon's water quality criteria for temperature and associated designated uses would effectively protect steelhead smoltification. In particular, Oregon's salmon and steelhead spawning through fry emergence use designation includes a 13°C/55°F criterion that would apply from the fall through the spring until either May 15th or June 15th in nearly all the waters where steelhead smoltification occurs."

3. GENERAL PUBLIC COMMENTS AND EPA RESPONSE

Comment: EPA must disapprove Oregon's rules because they are universally understood to be

incomprehensible.

EPA Response: EPA views the states and tribes as having the primary role and discretion in expressing their water quality standards. The CWA affords states and tribes great discretion in terms of how they express their standards. EPA reviews standards only to determine whether they meet the minimum requirements of the CWA. As stated in section 101(b) of the CWA, Congress made a pointed effort to "recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution [and] to plan the development and use (including restoration, preservation, and enhancement) of . . . water resources" (CWA section 101(b), 33 U.S.C. § 1251(b)). Consistent with the "vigorous federalism underlying the Clean Water Act," *United States v. Homestake Mining Co.*, 595 F.2d 421, 429 (8th Cir. 1979), the CWA sets forth a highly cooperative system for the exercise of the states' primary authority for setting water quality standards. EPA's role is largely one of oversight, in which it reviews a state's new or revised water quality standards as they are adopted by the states and submitted to EPA (CWA section 303(c), 33 U.S.C. § 1313(c); *City of Albuquerque v. Browner*, 97 F.3d 415, 425) (10th Cir. 1996) ("Congress clearly intended the EPA to have a limited, non-rulemaking role in the establishment of water quality standards.").[8] See also, *NWF v. Browner*, 1996 WL 601451 (D.D.C.) at 2. *Chevron, U.S.A., Inc v. Hammond*, 726 F.2d 483, 489 (9th Cir. 1984), cert denied, 471 U.S. 1140, (1985); *Environmental Defense Fund v. Costle*, 657 F.2d 275, 294 (D.C. Cir. 1981)(citing primary role of states and noting Legislative History of CWA that "the Administrator is to work closely with the states to obtain approved standards before he promulgates standards for any waters."(Leg. Hist. at 792)). Congress' bedrock emphasis on the states' leading role in the regulation of water pollution reaffirmed long-standing policy that had first appeared in the Federal Water Pollution Control Act, enacted on June 30, 1948, ch. 758, 62 Stat. 1155 (1948). That Act, which subsequently evolved into the CWA, has undergone four major revisions without change in this fundamental policy. See Pub. L. No. 89-234, 79 Stat. 903 (1965); Pub. L. No. 92-500, 86 Stat. 816 (1972); Pub. L. No. 95-217, 91 Stat. 1566 (1977); and Pub. L. No. 100-4, 101 Stat. 7 (1987)).

Comment: The prevalence of exemptions and exceptions hampers Oregon's ability to address temperature and use its antidegradation policy.

EPA Response: Please see discussions in Section 2.2 (Antidegradation), Section 2.8 (Human Use Allowance).

Comment: Oregon has not fulfilled the public participation requirements of the CWA; 40 CFR § 131.20(b); 25.5(b)(30 days/45 days). DEQ did not provide all supporting documentation prior to comment period/DEQ did not provide sufficient comment period.

EPA Response: EPA has determined that the State of Oregon, Department of Environmental Quality (ODEQ) provided an adequate public process under the Clean Water Act and its implementing regulations under Oregon State law.

ODEQ provided iterative versions of their proposed Division 41 Rule beginning on June 20,

[8] See also 40 C.F.R §§ 131.20(a) (providing for state review of state standards), 131.20(c) (providing for submission of the results of the review and any revisions of the standards to EPA), 131.6 (minimum requirements for any state standards submitted to EPA for review), 131.5 (concerning the substance of EPA's review).

2003. On August 14, 2003, the State of Oregon sent out the following public notice: "*Notice of Proposed Rulemaking- Revision of Water Quality Criteria for Temperature*." This notification, sent to an extensive mailing list, provided public notice of the proposed rulemaking and included the following information:

- Background on the need for the proposed rulemaking;
- Affected parties;
- How the proposal was developed with information on the Technical Advisory Committees, Policy Advisory Committees, and DEQ, EPA, NOAA Fisheries, USFWS and Oregon Department of Fish and Wildlife (ODFW) interagency workgroup;
- A brief description of the April 2003 *EPA Region 10 Guidance for Northwest State and Tribal Temperature Standards* (EPA 910-B-03-002);
- Oregon Department of Fish and Wildlife as the primary information source for the fish distribution and timing information found in the proposed maps and tables;
- The website for copies of the proposed rule, the maps, and tables;
- The website for the April 2003 *EPA Region 10 Guidance for Northwest State and Tribal Temperature Standards (*EPA 910-B-03-002); and
- Information on the 10 public hearings to be held by ODEQ from September 15 through September 24, 2003.

The Basin maps and tables were the main documentation of the time and place use designations and were made available for public access on the ODEQ website on August 14 and 15, 2003, provided at the 10 public hearings and located in all ODEQ offices. These maps are detailed computer generated, color-code descriptions of the five refined designated uses. The time and place designations were developed by the DEQ, EPA, NOAA Fisheries, USFWS and ODFW interagency workgroup primarily based on the April 2003 *EPA Region 10 Guidance for Northwest State and Tribal Temperature Standards (*EPA 910-B-03-002) and the ODFW database. At the ten September 2003 public hearings, ODEQ presented these Basin maps and tables, discussed at length how the maps were developed and provided a specific explanation of a sample map to help the public understand how to use and understand the use designation maps. A summary of public comments received and the response to those comments were attached to the November 13, 2003, ODEQ staff report to EQC. A hearing officer's report was also attached to the EQC staff report, as well as Attachment H, which is a summary description of the information and methodology DEQ used in developing its final rule. This attachment to the EQC staff report reflected the references and information previously identified on DEQ's website, in public meeting information, and EPA Temperature Guidance.

The critical database for the use designations used on the maps and tables was information developed by ODFW. This ODFW database was also available by website to the public (http://osu.orst.edu/dept/nrimp/information/fishdistdata.htm) ODEQ provided a document at the September 2003 public hearings (ODEQ Temperature Standards Revision, Reference Information, September 2003) which gave the ODFW website citation as well as other websites for the public to access. This database contained detailed maps and information upon which the proposed maps were based.

Specifically, the database contained detailed, color-coded maps of distributions of various life stages of salmonid species, abstracts of the data, and supplemental information about how the data were obtained. It also contained the name and agency from which the data were obtained. The ODFW methodology for developing their database is described in the *1:24K Fish Habitat*

Distribution Development Project Procedures Manual (Oregon Department of Fish and Wildlife, February 26, 2002). The database is the product of a multi-year effort by ODFW to develop consistent and comprehensive fish distribution data for a number of salmonid species. This database included all basins or sub-basins in Oregon that have anadromous fish. The distribution data represent known fish use based on documented observations, as well as the best professional judgment of local field biologists as to where use is likely to occur based on suitable habitat (i.e., waters near areas of documented life stage presence on the same water body that have similar habitat features, such as flow volume, gradient, gravel size, and pool frequency, and no known obstructions or reasons why the use would not also be present in these waters). ODFW compiled and reviewed fish distribution information from a variety of sources, including state and federal fisheries agencies, federal land management agencies, tribal entities, watershed councils and other interested public or private organizations. The ODFW fish distribution data reflect areas of fish use based on information collected over the past five life cycles for a particular species, which ranges from 15 to 35 years.

The timing information was a result of the DEQ, EPA, NOAA Fisheries, USFWS and ODFW interagency workgroup and was proposed by ODEQ in the proposed maps and tables provided to the public during the public comment period. ODFW was the primary source of information describing when a life stage use is known or likely to occur.

In addition to the ODFW information, ODEQ also relied upon the following sources of information to identify the proposed salmonid designated uses, respond to public comment and revise the proposed rules:

1. *Bull Trout Habitat Designation Report: Technical Work Group Recommendations* (ODEQ 2003);
2. USFWS proposed critical habitat for bull trout spawning and juvenile rearing (67 FR 71236, November 29, 2002);
3. Salmon Anchor Habitat Strategy for the Tillamook and Clatsop State Forests (Dewberry 2003);
4. Ecotrust Salmon Anchor Habitat in the Siuslaw River sub-basin (Ecotrust 2000); and
5. Temperature data (ODEQ database - Laboratory Analytical Storage and Retrieval Database List of WQ Monitoring Stations for Temperature in http://www.deq.state.or.us/wq/lasar/StationListParam.asp?ParameterKey-2224)

In addition, *EPA Region 10 Guidance for Northwest State and Tribal Temperature Standards (*EPA 910-B-03-002) issued in April 2003 was the subject of considerable public input and provided the bases for a significant portion of Oregon's rulemaking. In the course of developing that guidance, which EPA Region 10 issued in April 2003, EPA published and considered public comment on two drafts and engaged in considerable stakeholder communication between 2001 and 2002. Therefore, the public had a significant period of time previous to Oregon's proposed rulemaking to consider, discuss and provide public comment and input to much of the substance of Oregon's proposed standards changes. The critical document which provided the foundation for the framework to designate salmonid uses was the April 2003 *EPA Region 10 Guidance for Northwest State and Tribal Temperature Standards (*EPA 910-B-03-002). The time and place salmonid use designation framework can be found on pages 26-30 of this document. This Temperature Guidance document also provides the critical information basis for the specific numeric criteria, the thermal plume, human use allowance, cold water protection, air temp exclusion and natural conditions found in the Oregon rule.

Prior to the ODEQ proposed rulemaking, from 2001 - 2003, ODEQ worked extensively with various policy and technical advisory committees to discuss rule development and to develop drafts of these rules. These discussions included detailed descriptions of how the beneficial use maps and tables were compiled. ODEQ's website provides meeting summaries of these meetings which were available to the public throughout Oregon's rulemaking. Prior to initiating rulemaking, ODEQ sponsored informal "listening sessions" throughout the State to discuss the reasons for revising Oregon's water quality standards, the existing rule, the EPA Temperature Guidance and rulemaking options available to the State.

EPA stresses that the timeframe associated with this rulemaking was driven by a court order requiring EPA to either finalize its rule or approve Oregon's new or revised water quality standards, including completion of ESA consultation, by March 2, 2004. If Oregon determined to submit new or revised standards to EPA to meet the court deadline, Oregon had to submit state water quality standards to EPA by early December. This is because EPA needed time to review the new and revised standards and draft a Biological Evaluation (EPA, Feb. 2004) of EPA's action approving any such standards for review by the Services as required by the Endangered Species Act (ESA) and allow time for the Services to prepare a Biological Opinion on EPA's proposed action. Thus, to allow time for completion of ESA consultation, Oregon had to operate on an expedited schedule. This meant in some cases, that not all documents Oregon prepared for its rulemaking record were available on the date of proposal. Nevertheless, Oregon's process met the requirements of the CWA because Oregon provided all of the essential documents in a manner sufficient to allow the public to comment on Oregon's proposed rules. In fact Oregon did receive voluminous comments on its new and revised water quality standards and responded to those comments (found in the November 13, 2003, ODEQ staff report to the EQC).

Finally, on October 10, 2003, EPA published *EPA's Proposed Rule for Water Quality Standards for the State of Oregon* (68 FR 58757). The use designations in this proposed rule are almost the same as Oregon's proposed rule (Please refer to Chart 1 for a comparison between Oregon's proposed water quality standards and EPA's October 2003 Proposal). All of the time and place use designations (maps) proposed by EPA are also included in the Oregon rule maps. (Oregon's maps are somewhat more inclusive in that they establish uses for Lahontan cutthroat and Redband trout.) To the extent that EPA's preamble or record for the proposed rule provided additional explanation of the time and place use designations or other aspects of the proposed rule, the public had yet another opportunity to comment. EPA provided a 30-day comment period from the date of publication of its notice. EPA has considered the public comments it received on its proposed rule as well as the comments Oregon received on its proposed rule. EPA's consideration of the comments on its proposed rule would be sufficient to cure any alleged problems in Oregon's process. EPA has determined that the requirements of 40 CFR § 131.20 for public participation were satisfied by EPA's and ODEQ's processes. The State complied with 40 CFR § 131.20 which refers to Part 25. 40 CFR § 25.10(b) applies to state rulemaking and requires the state to follow its Administrative Procedure Act. On December 10, 2003, the State of Oregon, Department of Justice, submitted to EPA a letter which provided State Attorney General Certification that the proposed rules complied with the Oregon Administrative Procedures Act (APA). On February 24, 2004, the State of Oregon, Department of Justice, provided a letter to EPA with additional documentation of compliance with the Oregon APA and 40 CFR § 25.10(b).

Chart 1
Comparison Between Proposed Oregon WQS and EPA October 2003 Proposal

Provision	**State Proposed**	**EPA Proposed**
Salmonid Uses	State includes chum spawning in Columbia River, Lahontan Cutthroat and Redband trout	Same as state except EPA did not include Columbia River chum, Lahontan Cutthroat and Redband trout
Temperature Criteria	Same	Same
Bull Trout Spawning Below Dams	Allows for incremental heat increases where there is bull trout spawning below 4 dams	EPA proposed 2 alternatives: 1 of these applies to 4 specific sites - the other is more generic
Federal Dams	No provision	Provision - EPA Process to change *EPA* use designation
Natural Conditions	Same	Same
Anti-Degradation	For Tier 1, with assimilative capacity cost/benefit test prior to lowering	Same as state except Tier 1
Thermal Plume	Same	Same
IGDO	Same	Same

Comment: This triennial review not only fails to provide full protection to the State's designated and existing uses but it has been designed to reverse whatever benefits might have flowed from the previous standards and implementation rules.

EPA Response: EPA believes that Oregon's revised standards represent a significant step forward in the protection of salmonid species. In particular, the specific time and place designations of the various salmonid uses are all new, the suite of criteria to protect the uses represent the best scientific understanding of what is considered protective criteria, and the natural background narrative criteria is much clearer than the previous standards.

Comment: Is an incidental take statement needed under ESA?

EPA Response: The Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.), requires that federal agencies insure that any action authorized, funded, or carried out by such agencies are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. Regulations promulgated by the Services require that a federal agency consult with the Services if the agency's action "may affect" any listed species or critical habitat. The Region has entered into and completed consultation with the Services regarding approval of the Oregon Rules.

The culmination of the consultation process was issuance of a Biological Opinion by NOAA Fisheries on February 23, 2004 and by the U.S. Fish and Wildlife Service on February 25, 2004. The Services concluded that EPA's action would not jeopardize the continued existence of any endangered or threatened species or result in the destruction nor adverse modification of critical habitat. Both Biological Opinions also contained incidental take statements which authorize "take" of threatened or endangered species incidental to EPA's action, so long as the terms and conditions described in the incidental take statement are followed. EPA intends on adhering to the terms and conditions of the incidental take statements.

The Region has also committed to undertaking certain "conservation measures" pursuant to Section 7(a)(1) of the ESA. Conservation measures are actions or programs carried out by EPA in furtherance of the goals of the ESA, namely to help with the conservation of threatened or endangered species. As described in more detail in the Biological Evaluation (EPA, Feb. 2004) and Biological Opinion, the Region has proposed to: (1) to establish a baseline for temperature for the Core Cold Water Use and the Rearing and Migration Use;(2) to monitor to determine if the current temperatures are colder than the standards in order to protect them under the Cold Water provision, particularly in the areas designated for Rearing and Migration; and (3) to validate the judgements with regard to spatial and seasonal pattern associated with the numeric criteria. EPA has determined that these conservation measures will provide additional protection to endangered and threatened species by verifying that conclusions based on modelling and other information prove accurate in practice.

Comment: EPA must ensure compliance with the EPA Guidance for Data Quality Assessment and the Data Quality Act. (Comment on EPA proposed rule)

EPA Response: EPA has not identified information supporting a particular water quality standards approval as "influential" as that term is used in the Data Quality Act. The models referred to by the commenter are not related to EPA's approval action or the legal requirements for this action, but instead relate to establishment of TMDLs under section 303(d) of the CWA. TMDLs are not part of this water quality standards approval action. EPA has provided

explanations of the information and data used in the derivation of the Region 10 Temperature Guidance and Oregon's water quality standards in the record for this action. EPA has disclosed all data sources and the specific quantitative methods and assumptions that have been employed. These data and information are objective and reproducible. Please see documents referenced in the administrative record for more information. The commenter has not explained how EPA's approval of Oregon's use designations or temperature criteria violate the Data Quality Act or are contrary to EPA Guidance. These aspects of Oregon's rule are based on proper factors under the Clean Water Act. Consistent with the CWA's objective that states have the primary responsibility to carry out the provisions of the CWA and the Act's goal to restore and maintain the chemical, physical and biological integrity of the nation's waters, as long as a state's use designations meet the requirements of the CWA, EPA is required to approve those use designations. As long as criteria support those use designations, EPA is required to approve those criteria. The criteria approved today are based upon data referenced in EPA's Temperature Guidance, which was subject to extensive peer review. If a person believes a use established by a state is not attainable, the state has authority under these rules to remove the use, if it is not an existing use.

4. REVISIONS TO OREGON 340-041 RULES NOT REVIEWED BY EPA

Note: All underlined text indicates the actual change or revision to the rule unless otherwise noted. Additionally, some language is added for context that has not been changed.

Sub-Part A: No action because the provision is either not a Water Quality Standard, or review not required per court order *(NWEA v. EPA, 268 F.Supp.2d 1255 (D. Or. 2003).*

OAR 340-041-0002
Definitions
(1) "401 Certification Water Quality" means a determination made by DEQ that a dredge and fill activity, private hydropower facility, or other federally licensed or permitted activity that may result in a discharge to waters of the State, has adequate terms and conditions to prevent an exceedance of water quality criteria. The federal permit in question may not be issued without this State determination in accordance with the Federal Clean Water Act section 401 (33 USC 1341).

OAR 340-04l-0004
(4)(a) Rotating grazing pastures

OAR 340-04l-0004
(4)(b) Agricultural crop rotations

OAR 340-041-0007
State Wide Narrative Criteria
(3) Point source discharges must follow policies and guidelines in OAR 340-041-0004, and nonpoint source activities must follow guidelines in sections (6), (8), (9), (10), (11), and (12) of this rule.

OAR 340-041-0007
State Wide Narrative Criteria

(10) In order to improve controls over nonpoint sources of pollution, federal, State, and local resource management agencies will be encouraged and assisted to coordinate planning and implementation of programs to regulate or control runoff, erosion, turbidity, stream temperature, stream flow, and the withdrawal and use of irrigation water on a basin-wide approach so as to protect the quality and beneficial uses of water and related resources. Such programs may include, but not be limited to, the following:

(e) Federal water quality restoration plans.

OAR 340-041-0007

Q. Minimum Design Criteria for Treatment and Control of Wastes. Except as provided in OAR 340-041-0101 through OAR 340-041-0350, and subject to the implementation requirements set forth in OAR 340-041-0061, prior to discharge of any wastes from any new or modified facility to any waters of the State, such wastes must be treated and controlled in facilities designed in accordance with the following minimum criteria.

OAR 340-041-0009
Bacteria

(10) Water Quality Limited for Bacteria. In those water bodies, or segments of water bodies identified by the Department as exceeding the relevant numeric criteria for bacteria in the basin standards and designated as water quality limited under section 303(d) of the Clean Water Act, the requirements specified in section 11 of this rule and in OAR 340-041-0061(12) must apply.

OAR 340-041-0028
Temperature

(1) Background. Water temperatures affect the biological cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations throughout the State. Water temperatures are influenced by solar radiation, stream shade, ambient air temperatures, channel morphology, groundwater inflows, and stream velocity, volume, and flow. Surface water temperatures may also be warmed by anthropogenic activities such as discharging heated water, changing stream width or depth, reducing stream shading, and water withdrawals.

OAR 340-041-0028

(6) Natural Lakes. Natural lakes may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the ambient condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life.

OAR 340-041-0028

(7) Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the ambient condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life.

OAR 340-041-0028

(9) **Cool Water Species**. Waters that support cool water species may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the ambient condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Cool waters of the State are described on subbasin tables set out in OAR 340-041-0101 to OAR 340-041-0340: Tables 140B, 180B, 201B, and 250B.

OAR 340-041-0028

(10) **Borax Lake Chub**. State waters in the Malheur Lake Basin supporting the borax lake chub may not be cooled more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) below the ambient condition.

OAR 340-041-0028

(12) **Implementation of the Temperature Criteria.**

(a) Minimum Duties. There is no duty for anthropogenic sources to reduce heating of the waters of the State below their natural condition. Similarly, each anthropogenic point and nonpoint source is responsible only for controlling the thermal effects of its own discharge or activity in accordance with its overall heat contribution. In no case may a source cause more warming than that allowed by the human use allowance provided in subsection (b) of this rule.

OAR 340-041-0028

(12)(b) Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:

(D) A point source in compliance with the temperature conditions of its NPDES permit is deemed in compliance with the applicable criteria.

OAR 340-041-0028

(12)(d) Low Flow Conditions. An exceedance of the biologically-based numeric criteria in section (4) of this rule, or an exceedance of the natural condition criteria in section (8) of this rule will not be considered a permit violation during stream flows that are less than the 7Q10 low flow condition for that water body.

OAR 340-041-0028

(12)(e) Forestry on State and Private Lands. For forest operations on State or private lands, water quality standards are intended to be attained and are implemented through best management practices and other control mechanisms established under the Forest Practices Act (ORS 527.610 to 527.992) and rules thereunder, administered by the Oregon Department of Forestry. Therefore, forest operations that are in compliance with the Forest Practices Act requirements are (except for the limits set out in ORS 527.770) deemed in compliance with this rule. DEQ will work with the Oregon Department of Forestry to revise the Forest Practices program to attain water quality standards.

OAR 340-041-0028

(12)(f) Agriculture on State and Private Lands. For farming or ranching operations on State or private lands, water quality standards are intended to be attained and are implemented through the Agricultural Water Quality Management Act (ORS 568.900 to 568.933) and rules thereunder, administered by the Oregon Department of Agriculture. Therefore, farming and ranching operations that are in compliance with the Agricultural Water Quality Management Act requirements will not be subject to DEQ enforcement under this rule. DEQ will work with the Oregon Department of Agriculture to revise the

Agricultural Water Quality Management program to attain water quality standards.

OAR 340-041-0028

(12)(g) Agriculture and Forestry on Federal Lands. Agriculture and forestry activities conducted on federal land must meet the requirements of this rule and are subject to the department's jurisdiction. Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices and aquatic conservation strategies. Where a Federal Agency is a Designated Management Agency by the Department, implementation of these plans, practices and strategies is deemed compliance with this rule.

OAR 340-041-0028

(12)(h) Other Nonpoint Sources. The department may, on a case-by-case basis, require nonpoint sources (other than forestry and agriculture), including private hydropower facilities regulated by a 401 water quality certification, that may contribute to warming of State waters beyond 0.3 degrees Celsius (0.5 degrees Fahrenheit), and are therefore designated as water-quality limited, to develop and implement a temperature management plan to achieve compliance with applicable temperature criteria or an applicable load allocation in a TMDL pursuant to OAR 340-042-0080.

(A) Each plan must ensure that the nonpoint source controls its heat load contribution to water temperatures such that the water body experiences no more than a 0.3 degrees Celsius (0.5 degree Fahrenheit) increase above the applicable criteria from all sources taken together at the maximum point of impact.

(B) Each plan must include a description of best management practices, measures, effluent trading, and control technologies (including eliminating the heat impact on the stream) that the nonpoint source intends to use to reduce its temperature effect, a monitoring plan, and a compliance schedule for undertaking each measure.

(C) The Department may periodically require a nonpoint source to revise its temperature management plan to ensure that all practical steps have been taken to mitigate or eliminate the temperature effect of the source on the water body.

(D) Once approved, a nonpoint source complying with its temperature management plan is deemed in compliance with this rule.

OAR 340-041-0028

(12)(i) Compliance Methods. Anthropogenic sources may engage in thermal water quality trading in whole or in part to offset its temperature discharge, so long as the trade results in at least a net thermal loading decrease in anthropogenic warming of the water body, and does not adversely affect a threatened or endangered species. Sources may also achieve compliance, in whole or in part, by flow augmentation, hyporheic exchange flows, outfall relocation, or other measures that reduce the temperature increase caused by the discharge.

OAR 340-041-0028

(12)(j) Release of Stored Water. Stored cold water may be released from reservoirs to cool downstream waters in order to achieve compliance with the applicable numeric criteria. However, there can be no significant adverse impact to downstream designated beneficial uses as a result of the releases of this cold water, and the release may not contribute to

violations of other water quality criteria. Where the Department determines that the release of cold water is resulting in a significant adverse impact, the Department may require the elimination or mitigation of the adverse impact.

OAR 340-041-0061

(11) Forestry on State and Private Lands. For forest operations on State or private lands, water quality standards are intended to be attained and are implemented through best management practices and other control mechanisms established under the Forest Practices Act (ORS 527.610 to 527.992) and rules thereunder, administered by the Oregon Department of Forestry. Therefore, forest operations that are in compliance with the Forest Practices Act requirements are (except for the limits set out in ORS 527.770) deemed in compliance with this Division. DEQ will work with the Oregon Department of Forestry to revise the Forest Practices program to attain water quality standards

OAR 340-041-0061

(13) Agriculture and Forestry on Federal Lands. Agriculture and forestry activities conducted on federal land must meet the requirements of this Division and are subject to the department's jurisdiction. Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices and aquatic conservation strategies. Where a Federal Agency is a Designated Management Agency by the Department, implementation of these plans, practices and strategies is deemed compliance with this Division.

Note: The following provisions are not underlined because they are all additions to Oregon's Rule.

OAR 340-041-0103

Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Columbia River – Dioxin – February 25, 1991
Columbia River - Dissolved Gas – November 11, 2002

OAR 340-041-0122

Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0133

Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0143

Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's

web site:
None

OAR 340-041-0154
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Upper Grande Ronde – Temperature, Sediment, Nitrogen and Phosphorous – May 3, 2000

OAR 340-041-0164
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Western Hood – Temperature – January 30, 2002

OAR 340-041-0174
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0184
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Upper Klamath Lake Drainage – Temperature, Dissolved Oxygen, pH, Chlorophyll a – August 7, 2002.

OAR 340-041-0194
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0204
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0224
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Clear Lake – Phosphorus – December 8, 1992

OAR 340-041-0234
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Nestucca Bay Drainage – Temperature, Bacteria and Sediment – May 13, 2002
Tillamook Bay Drainage – Temperature and Bacteria – July 31, 2001
North Coast – Temperature and Bacteria - August 20, 2003

OAR 340-041-0254
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0264
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0274
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Bear Creek – Ammonia, BOD and Phosphorus – December 8, 1992
Lobster Creek – Temperature – June 13, 2002
Lower Sucker Creek – Temperature – May 30, 2002
Upper Sucker Creek – Temperature – May 4, 1999

OAR 340-041-0289
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0304
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Coquille – BOD – July 3, 1996
Upper South Fork of the Coquille – Temperature – March 23, 2001

OAR 340-041-0314
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Umatilla River Basin – Temperature, pH, Sediment, Turbidity, Aquatic Weeds, and Algae – May 9, 2001

OAR 340-041-0324
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's

web site:
Little River – Temperature, pH and Sediment – January 29, 2002

OAR 340-041-0334
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
None

OAR 340-041-0344
Approved TMDLs in the Basin:

The following TMDLs have been approved by EPA, and appear on the Department's web site:
Columbia Slough - Bacteria, Dissolved Oxygen, Chlorophyll a, pH, lead, PCBs, Dieldrin, Dioxin, DDE/DDT, and Phosphorus – November 25, 1998
Pudding – Ammonia and BOD – October 18, 1993
Rickreall Creek – BOD – April 18, 1994
Tualatin – Temperature, Bacteria, Dissolved Oxygen, Settleable Volatile Solids, Ammonia, Chlorophyll a, pH and Phosphorus – August 7, 2001
Yamhill – Phosphorus – December 8, 1992
Willamette – Dioxin – February 25, 1991
Willamette Coast Fork – Ammonia and Phosphorus – May 17, 1996

Sub-Part B: No action because non-substantive editorial changes

The following provisions include non-substantive editorial changes or corrections that do not alter the substance of the water quality standards EPA has previously approved. EPA does not deem these to be "revised or new" water quality standards requiring EPA action under CWA § 303(c), and therefore is not taking action on them. Nonetheless EPA will include these non-substantive language changes in EPA's e-docket, and will treat these provisions to be the water quality standards that are in effect for purposes of the Clean Water Act.

Note: All underlined text indicates the actual change or revision to the rule unless otherwise noted. Additionally, some language is added for context that has not been changed.

OAR 340-041-004(9)(a)(D)(iii)
Antidegradation Exceptions.

(iii) Effective July 1, 1996, in water bodies designated water-quality limited for dissolved oxygen, when establishing WLAs under a TMDL for water bodies meeting the conditions defined in this rule, the Department may at its discretion provide an allowance for WLAs calculated to result in no measurable reduction of dissolved oxygen (DO). For this purpose, "no measurable reduction" is defined as no more than 0.10 mg/L for a single source and no more than 0.20 mg/L for all anthropogenic activities that influence the water quality limited segment. The allowance applies for surface water DO criteria and for Intergravel dissolved oxygen (IGDO) if a determination is made that the conditions are natural. The allowance for WLAs <u>applies</u> only to surface water 30-day and seven-day means; or

OAR 340-041-0007
State Wide Narrative Criteria

(4) For any new waste sources, alternatives that utilize reuse or disposal with no discharge to public waters must be given highest priority for use wherever practicable. New source discharges may be approved subject to the criteria in OAR 340-041-0004(9).

OAR 340-041-0021
pH

(1) Unless otherwise specified in OAR 340-041-0101 through 340-041-0350, pH values (Hydrogen ion concentrations) may not fall outside the following ranges:

OAR 340-041-0033
Toxic Substances

(3) The criteria in section (2) of this rule must apply unless data from scientifically valid studies demonstrate that the most sensitive beneficial uses will not be adversely affected by exceeding criterion...

OAR 340-041-0033
Toxic Substances

(4) If the Department determines that it is necessary to monitor the toxicity of complex effluents, other suspected discharges or chemical substances without numeric criteria to aquatic life, then bio-assessment studies may be conducted. Laboratory bioassays or in-stream measurements of indigenous biological communities, properly conducted in accordance with standards testing procedures, may be considered as scientifically valid data for the purposes of section (3) of this rule. If toxicity occurs, the Department will evaluate and implement necessary measures to reduce or eliminate the toxicity on a case-by-case basis.

OAR 340-041-0061
Other Implementation of Water Quality Criteria

(5) Confined animal feeding operations (CAFOs) are regulated pursuant to OAR 340-051-0005 through 340-051-0080 in order to minimize potential adverse effect on water quality (see also OAR 603-074-0005 through 603-074-0070).

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APPENDIX A

FINAL GENERAL BENEFICIAL USE TABLES

http://www.deq.state.or.us/wq/standards/WQStdsFinalGenBenUseTables.htm

Table 101A. Designated Beneficial Uses - Mainstem Columbia River
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable101A_Columbia.pdf

Table 121A. Designated Beneficial Uses - Mainstem Snake River
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable121A_Snake.pdf

Table 130A. Designated Beneficial Uses - Deschutes Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable130A_Deschutes.pdf

Table 140A. Designated Beneficial Uses - Goose and Summer Lakes Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable140A_GooseSummer.pdf

Table 151A. Designated Beneficial Uses - Grande Ronde Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable151A_GrandeRonde.pdf

Table 160A. Designated Beneficial Uses - Hood Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable160A_Hood.pdf

Table 170A. Designated Beneficial Uses - John Day Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable170A_JohnDay.pdf

Table 180A. Designated Beneficial Uses - Klamath Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable180A_Klamath.pdf

Table 190A. Designated Beneficial Uses - Malheur Lake Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable190A_MalheurLake.pdf

Table 201A. Designated Beneficial Uses - Malheur River Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable201A_MalheurRiver.pdf

Table 220A. Designated Beneficial Uses - Mid Coast Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable220A_MidCoast.pdf

Table 230A. Designated Beneficial Uses - North Coast Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable230A_NorthCoast.pdf

Table 250A. Designated Beneficial Uses - Owyhee Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable250A_Owyhee.pdf

Table 260A. Designated Beneficial Uses - Powder/Burnt Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable260A_PowderBurnt.pdf

Table 271A. Designated Beneficial Uses - Rogue Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable271A_Rogue.pdf

Table 286A. Designated Beneficial Uses - Sandy Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable286A_Sandy.pdf

Table 300A. Designated Beneficial Uses - South Coast Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable300A_SouthCoast.pdf

Table 310A. Designated Beneficial Uses - Umatilla Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable310A_Umatilla.pdf

Table 320A. Designated Beneficial Uses - Umpqua Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable320A_Umpqua.pdf

Table 330A. Designated Beneficial Uses - Walla Walla Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable330A_WallaWalla.pdf

Table 340A. Designated Beneficial Uses - Willamette Basin
http://www.deq.state.or.us/wq/standards/GenBenUseTablesFinal/FTable340A_Willamette.pdf

FINAL FISH USE TABLES

http://www.deq.state.or.us/wq/standards/WQStdsFinalFishUseTables.htm

Table 101B. Fish Use Designations - Mainstem Columbia River
http://www.deq.state.or.us/wq/standards/FishUseTablesFinal/FTable101B_Columbia.pdf

Table 121B. Fish Use Designations - Mainstem Snake River
http://www.deq.state.or.us/wq/standards/FishUseTablesFinal/FTable121B_Snake.pdf

Table 140B. Fish Use Designations - Goose and Summer Lakes Basin
http://www.deq.state.or.us/wq/standards/FishUseTablesFinal/FTable140B_GooseSummer.pdf

Table 190B. Fish Use Designations - Malheur Lake Basin
http://www.deq.state.or.us/wq/standards/FishUseTablesFinal/FTable190B_MalheurLake.pdf

Table 250B. Fish Use Designations - Owyhee Basin
http://www.deq.state.or.us/wq/standards/FishUseTablesFinal/FTable250B_Owyhee.pdf

FINAL FISH USE MAPS

Figure 130A.Fish Use Designations – Deschutes Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure130A_Deschutes.pdf

Figure 130B. Salmon and Steelhead Spawning Use Designations – Deschutes Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure130B_Deschutes.pdf

Figure 151A. Fish Use Designations – Grande Ronde Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure151A_GrandeRonde.pdf

Figure 151B. Salmon and Steelhead Spawning Use Designations – Grande Ronde Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure151B_GrandeRonde.pdf

Figure 160A. Fish Use Designations – Hood Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure160A_Hood.pdf

Figure 160B. Salmon and Steelhead Spawning Use Designations – Hood Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure160B_Hood.pdf

Figure 170A. Fish Use Designations – John Day Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure170A_JohnDay.pdf

Figure 170B. Salmon and Steelhead Spawning Use Designations – John Day Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure170B_JohnDay.pdf

Figure 180A. Fish Use Designations – Klamath Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure180A_Klamath.pdf

Figure 201A. Fish Use Designations – Malheur River Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure201A_MalheurRiver.pdf

Figure 220A. Fish Use Designations – Mid Coast Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure220A_MidCoast.pdf

Figure 220B. Salmon and Steelhead Spawning Use Designations – Mid Coast Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure220B_MidCoast.pdf

Figure 230A. Fish Use Designations – North Coast Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure230A_NorthCoast.pdf

Figure 230B. Salmon and Steelhead Spawning Use Designations – North Coast Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure230B_NorthCoast.pdf

Figure 260A. Fish Use Designations – Powder Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure260A_Powder.pdf

Figure 271A. Fish Use Designations – Rogue Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure271A_Rogue.pdf

Figure 271B. Salmon and Steelhead Spawning Use Designations – Rogue Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure271B_Rogue.pdf

Figure 286A. Fish Use Designations – Sandy Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure286A_Sandy.pdf

Figure 286B. Salmon and Steelhead Spawning Use Designations – Sandy Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure286B_Sandy.pdf

Figure 300A. Fish Use Designations – South Coast Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure300A_SouthCoast.pdf

Figure 300B. Salmon and Steelhead Spawning Use Designations – South Coast Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure300B_SouthCoast.pdf

Figure 310A. Fish Use Designations – Umatilla Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure310A_Umatilla.pdf

Figure 310B. Salmon and Steelhead Spawning Use Designations – Umatilla Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure310B_Umatilla.pdf

Figure 320A. Fish Use Designations – Umpqua Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure320A_Umpqua.pdf

Figure 320B. Salmon and Steelhead Spawning Use Designations – Umpqua Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure320B_Umpqua.pdf

Figure 340A. Fish Use Designations – Willamette Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure340A_Willamette.pdf

Figure 340B. Salmon and Steelhead Spawning Use Designations – Willamette Basin
http://www.deq.state.or.us/wq/standards/FishUseMapsFinal/FFigure340B_Willamette.pdf